NATUR CYMRU

The Nature of Wales

Rhif/Number 19 • Summer/Haf 2006

In this edition:

- Snowdonia's corvids
- Angling and bats
- Woodland birds
- Sustainable farming
- The return of the red squirrel
- Disappearing eels
- Dolydd fy ieuenctid

PLUS Books, News, Comment...

NATUR CYMRU
The Nature of Wales

Golygydd/ Editor:
James Robertson
naturcymru@gmail.com

Golygydd Cynorthwyol/
Assistant Editor:
Mandy Marsh
Tel: 01248 385574
m.marsh@ccw.gov.uk

Tanysgrifiadau/Subscriptions:
£12.50 y flwyddyn/per year

A fyddech gystal ag anfon sieciau yn daladwy i:
Please send cheques payable to **Natur Cymru** to:

Natur Cymru
Maes y Ffynnon
Penrhos Garnedd
Bangor
Gwynedd
Wales
LL57 2DW

Cwmni Cyfyngedig trwy Warant yw Natur Cymru Cyfyngedig, ac nid yw'n gwmni sy'n gwneud elw. Mae wedi ei gofrestru yng Nghymru a Lloegr, rhif 5636217. Nid barn Natur Cymru Cyfyngedig na'r Golygyddion a leisir yn y cylchgrawn hwn o angenrheidrwydd.

Natur Cymru Limited is a non-profit making Company Limited by Guarantee, registered in England and Wales, no. 5636217. The views expressed in this magazine are not necessarily those of Natur Cymru Limited or of the Editors.

Cyhoeddir *Natur Cymru* bedair gwaith y flwyddyn, mis Mawrth, mis Mehefin, mis Medi a mis Rhagfyr. Cyhoeddir erthyglau yn yr iaith wreiddiol. Mae crynodeb yn yr iaith arall yn dilyn pob erthygl. Ceir rhai colofnau arferol yn y ddwy iaith. Os dymunwch gael cyfieithiad o unrhyw erthygl, cysylltwch a'r Golygydd.

Bwriedir i *Natur Cymru* hyrwyddo a chyfnewid gwybodaeth am fioamrywiaeth a hyrwyddo dadl. Os oes gennych wybodaeth, erthyglau neu waith celf y credwch a allai fod o ddiddordeb i'r darllenwyr, cysylltwch â'r Golygydd os gwelwch yn dda.

Natur Cymru is published four times per year, in March, June, September and December. Articles are published in the language in which they are submitted. They are followed by summaries in the other language, and some regular columns appear in both languages. If you would like to receive a translation of any article, please contact the Editor.

Natur Cymru is intended to promote the exchange of information about biodiversity and encourage debate. If you have information, ideas for articles or artwork which you think might be of interest to readers, please contact the Editor.

Mae *Natur Cymru* wedi'i argraffu ar bapur di-glorin a ddaw o goedwigoedd cynaliadwy sy'n cael eu rheoli.
Natur Cymru is printed on chlorine-free paper sourced from managed and sustainable forests.

Clawr blaen / Front cover:
Alastair Robertson

ISSN 1742-3740

Dylunio gan/Design by: Mel Parry Design, melparry@beeb.net Argraffwyd gan/Printed by: LS Printworks, Amlwch

NATUR CYMRU CYNNWYS • CONTENTS

Golygyddol / Editorial ..... 2 - 3
James Robertson

Snowdonia's corvids ..... 4 - 7
Darryl Jones

Dolydd fy ieuenctid - caeau Eithinog a Briwas ..... 8 - 13
Maredudd Ap Rheinallt

Angling and bats ..... 14 - 17
Richard Dodd

Outside the walls and into the field ..... 18 - 21
Jan Martin

The song of the wood warbler 22- 26
Patrick Lindley

The vanishing ocean traveller ..... 27 - 31
Tristan Hatton-Ellis and Ziggy Otto

Sustainable farming, what does it mean? ..... 32 - 36
James Robertson

The return of the red squirrel ..... 37 - 41
Craig Shuttleworth

NODWEDDION ARFEROL / REGULAR FEATURES

Silff lyfrau amgylcheddol / Green bookshelf Alan Hale, James Robertson, Andrew Lucas ..... 42 - 43

Cymru a'r byd / Wales and the world Geraint Hopkins ..... 44 - 45

Islands round-up Geoff Gibbs 46

Mammal news Frances Cattanach 47

Hysbysfwrdd / Noticeboard Mandy Marsh 48

NATUR CYMRU GOLYGYDDOL

Fe welodd y cylchgrawn hwn olau dydd bum mlynedd yn ôl, wedi gwae y clwy' traed a genau. Er mor erchyll oedd y bennod honno, fe wnaeth i bobl a gwleidyddion sylweddoli nad gwerth amaethyddol yn unig oedd i gefn gwlad Cymru.

Cawsom wledd o ddeunyddiau ar gyfer y cylchgrawn hwn dros y blynyddoedd, diolch i wytnwch byd natur ac i ymdrechion unigolion a mudiadau. Yn ddi-os, mae bywyd gwyllt Cymru wedi ein cynhyrfu, gyda chofnodion cyntaf gwalch y pysgod, y cambig a'r titw barfog, ynghyd â chofnodion eraill am fywyd gwyllt. Ond straeon pobl, hefyd, a geir rhwng cloriau'r cylchgrawn hwn, sef y bobl hynny sydd wedi gweithio mor galed i drysori ein treftadaeth a'n diwylliant. Gall cylchgrawn sy'n ymwneud â 'byd natur Cymru', ac sydd rywfaint yn fwy cyffredinol ei naws na'i ragflaenydd, *Nature in Wales*, ddathlu ymdrechion natur a phobl fel ei gilydd.

Mi fyddai'n annheg i'r cylchgrawn hwn ddathlu llwyddiannau amgylcheddol yn unig. Mae pobl yn dod i ddeall fwyfwy ein bod ni'n byw mewn ffordd anghynaladwy - hynny yw, y tu hwnt i allu amgylcheddol y ddaear i'n cyflenwi a'n cynnal. Mae erthyglau'r gorffennol, felly, wedi ymdrin â phynciau fel llygredd awyr, asideiddio, newid hinsawdd a chronfeydd carbon ac yn y rhifyn hwn ry'n ni'n edrych ar ffermio cynaliadwy - gyda chyfeiriad at ran wahanol iawn o'r byd, sef Ciwba!

Er bod pell ffordd i fynd cyn y gwelwn anghenion amgylcheddol yn cael eu hadlewyrchu'n llawn mewn datblygiadau economaidd ac yn y modd y mae'n tir a'n môr yn cael eu rheoli, mae yna bethau calonogol yn digwydd. Ystyrir un o'r rhain, sef Strategaeth yr Amgylchedd, yn y rhifyn hwn. Ond er yr holl fwriadau da yn y strategaeth, trist yw nodi fod bioamrywiaeth yn dal i ddirywio. Adroddwn yma am y bygythiadau i adar coedwig fel telor y coed a'r tingoch.

Gwarchod natur, yn null Ciwba.
Protecting nature, Cuban style.

Joanna Robertson

Pwrpas y cylchgrawn hwn yw eich porthi, fel tanysgrifiwr, gyda gwybodaeth am amgylchedd Cymru. Er mwyn creu dyfodol sicrach i'r cylchgrawn rydym wedi sefydlu cwmni cyfyngedig, gyda thîm cryfach o Gyfarwyddwyr i'n helpu ni ddatblygu at y dyfodol. Dwi'n awyddus bob amser i glywed eich barn chi am y cylchgrawn - y drwg a'r da - ac yn croesawu syniadau am erthyglau. Ac os oes gennych unrhyw syniadau ynglŷn â sut y gallwn gyrraedd cynulleidfa ehangach - dowch a nhw!

James Robertson

NATUR CYMRU EDITORIAL

Five years ago this magazine was launched, in the aftermath of the Foot and Mouth Disease outbreak, which closed the countryside and brought home its huge non-agricultural economic importance. At the launch the First Minister Rhodri Morgan described walking through meadows released from grazing and filled with flowers for the first time in almost a generation, and being reminded of his childhood.

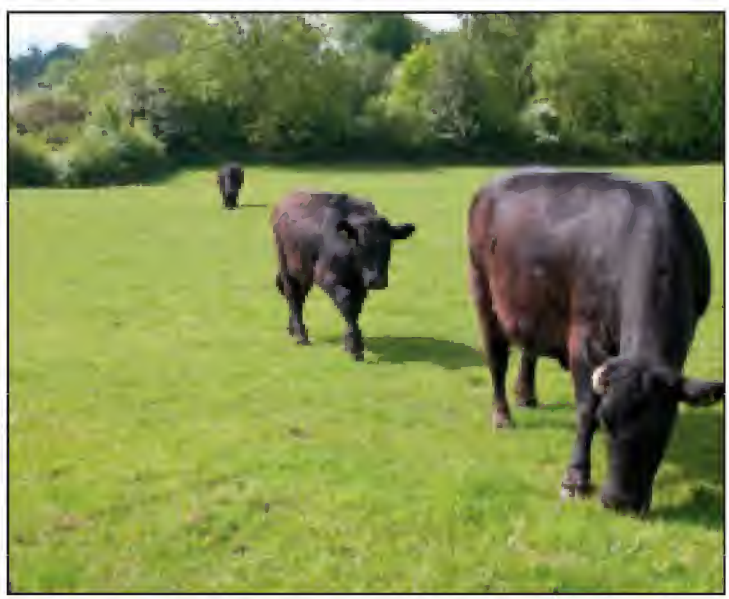
The resilience of nature and the remarkable efforts of individuals and organisations have given this magazine a wonderful supply of material. Nature has provided excitement in the form of birds like the osprey, avocet and bearded tit, and other new wildlife records; but the stories equally belong to the people who have worked so hard to cherish our combined heritage of nature and culture. A magazine dedicated to 'the nature of Wales', which is subtly broader that its predecessor, *Nature in Wales*, is able to celebrate both nature and human endeavour.

It would give a false impression if this magazine only covered environmental success stories. As more and more people are coming to understand, our society is not a sustainable one, which means that it is living beyond its environmental means. So previous editions have looked at issues such as airborne pollution, acidification, climate change and carbon sinks, and here we look at sustainable farming, with reference to a very different part of the world - the capital of Salsa, Cuba!

If a proper understanding of environmental needs has yet to be fully built into economic development and the way our land and sea is managed, then there are encouraging moves in the right direction. The implications of one of these, the Wales Environment Strategy, is considered here. Sadly, for all the good intentions in the Strategy, 'biodiversity' is still in decline. We report on threats to specialist woodland birds like the wood warbler and redstart in this issue.

This magazine exists to satisfy the appetite which you, as a subscriber, have for information about the Welsh environment. To put it on a firmer footing, we have now become a limited company, with a strengthened team of Directors to help us develop in the future. I am always keen to hear about what you like most (and least) about the magazine, and welcome ideas for articles. If you have any thoughts about how we can reach a wider audience, I'd like to hear those too!

James Robertson



Joanna Robertson

Snowdonia's **Corvids**

Jay

Michael Hammett

Studies have shown the crow family to be among the most intelligent of all animals, not just birds, which may be why we attribute such anthropomorphic characteristics to them. ***DARRYL JONES*** *looks at a corner of north-west Wales where all seven members of the family can be found within a few miles of each other.*

The crow family (corvids) has had a long and dynamic association with people. Human reactions to these birds span a broad range: fear and admiration; revilement and worship; indifference and fascination. Possibly no other group of birds has generated such deeply held responses, or has produced such a rich history of theories, myths, stories and just plain nonsense. It's not hard to understand why. These extraordinarily intelligent birds have been involved - directly or indirectly - in the activities of humans since the first arrival of the ancients many millennia ago. Being observant, opportunist, but also careful to a fault, crows have long been finding ways to benefit from human activities: jackdaws nesting in chimneys and castle walls; carrion crows and ravens gorging on slain warriors and roadkill; rooks unearthing freshly sown crop seed. When such opportunism is seen as costly, damaging or repugnant, conflict typically ensues and, in many cases, has continued unabated for centuries. Nonetheless, most of them are still with us: “They're tough blighters!”

Throughout the world, corvids and people have had a similarly colourful

and mixed coexistence, though it is clear that the commonest human reaction has been negative. Despite this - and considerable lethal persecution - crows have tended to endure, if not prosper. This is especially obvious in relation to the spectacular expansion of urban areas, especially in the tropics and the New World. Whereas the vast majority of native species disappear under the expanding suburbs, the local crow species are among the few birds that don't simply survive but unquestionably thrive. In Singapore, Seattle and Sydney, crows are now super-abundant and among the most conspicuous of birds.

In Britain, of course, the situation is somewhat different. The relationships between human activities and corvids have been established since ancient times, although modern agricultural practices are currently posing new challenges - or opportunities. And it is important to appreciate that there are seven 'crows' inhabiting these lands and the types of interaction each has had with humans has often been markedly different. In most locations, however, only a few species tend to be found living near one another.

Except in north Wales! In the narrow band of land between the peaks of Snowdonia and the Menai Straits, all seven corvid species can be found, most still in reasonable numbers. As someone interested in the way that birds, and especially corvids, respond to human activities, this was somewhere I had long hoped to visit. This was also the home of my ancestors so the chance to spend a sabbatical at the University of Wales at Bangor was an opportunity I had to accept. Imagine being obliged to spend your days wandering the mountains of Snowdonia for work! But I took it seriously and as well as seeing a lot of stunning scenery (and plenty of terrible weather), I also saw plenty of corvids.

Tom Cameron

Jackdaw

My main objective was to quantify something that people living in the area have presumably taken for granted for a very long time: the changing abundance of each species of corvid as one moves from the village outwards through the pastures and up into the mountains. Noting carefully the numbers of each species I encountered (within 500m either side of my path), I undertook seven long and different routes from various north Wales villages up into the high pastures, as well as along the agricultural lands beside the Menai Straits. For simplicity, I recognised five different habitat types: urban (village or town); pasture; high pasture (being pasture more than 400m above sea level); woodland; and agricultural land (where the predominant land use was cropping rather than grazing).

In total I walked 62.9 km - mainly near Bangor, Abergwyngregyn and Llanfairfechan - and recorded a total of 1,613 corvids of all seven species. Because I traversed very different amounts of each habitat type, I standardised the abundance of the species into the average number of birds per kilometre. A summary of this information is provided in the table.

Rook

Michael D Smith

Average number of individuals per kilometre for each species in five habitats:

	Urban	Pasture	High Pasture	Woodland	Agricultural
Magpie *Pica pica*	1.0	1.5	0.1	1.2	0.6
Jackdaw *Corvus monedula*	20.2	5.6	0	0.3	47.1
Carrion crow *Corvus corone*	1.3	4.5	4.6	1.5	44.4
Raven *Corvus corax*	0.2	0.4	1.4	0	0
Chough *Pyrrhocorax pyrrhocorax*	0	0	0.4	0	0
Jay *Garrulus glandarius*	0	0	0	0.3	0
Rook *Corvus frugilegus*	0	0	0	0	3.4

Superficially, this information suggests two patterns of association with the habitats: the first four of the species (magpie, jackdaw, crow and raven) are 'generalists' in terms of habitat selection, being found in all or most of the habitats, while the other three (chough, jay and rook) appear more 'specialist', each being found only in a single habitat: chough in the high pasture, jays in the woodland and rooks in the agricultural lands.

However, these figures, having been condensed into averages, hide valuable information on flock sizes and overall abundance, and such information paints a clearer picture of the species and their associations with humans. For instance, only two species were found in really large numbers and these were jackdaws and crows. Although the largest single flocks of these species - 140 jackdaws and 130 crows - were found foraging among the harvested agricultural lands along the coast (615 jackdaws and crows were counted in one field), these birds spent most of their times in pairs or small groups elsewhere: jackdaws in the villages and crows in the pastures.

Only the rooks lived more or less permanently in the agricultural habitat. The area (close to the hamlet of Abergywyngregyn) supported one moderately sized rookery of about 100 birds but a single foraging flock of 35 comprised the only rooks detected during the surveys, hence the low numbers in the table.

The remaining species, magpie, raven, chough and jay, were generally found in much lower numbers, although the magpie and raven were obviously more tolerant of human activities than the chough and jay, which were always difficult to approach.

These limited observations provide a fascinating picture of the way that these seven, otherwise very similar species (four from the same genus), have responded and adapted to human activities and

CCW

Pasture, wood and mountain in close proximity

opportunities. For some, such as the jackdaws, crows and rooks, the advent of human houses and agricultural practices have provided opportunities to make the most of - to the extent that it is hard to imagine how jackdaws, at least, would live if not for people. At the other extreme, choughs have been greatly disadvantaged by human practices and their highly specialised lifestyle appears to have left them vulnerable (see Ian Bullock's story in *Natur Cymru* No. 15). Clearly, there is much we have still to learn from these familiar yet often misunderstood birds.

Darryl Jones *is a senior lecturer in ecology at the Australian School of Environmental Studies at Griffith University in Brisbane, specialising in wildlife management and behavioural ecology.*

Carrion crow

Tom Cameron

Chough

Michael D Smith

Brain Gogledd Eryri

Gwelir y saith math o frân Brydeinig ar y rhuban tir rhwng y Fenai a chopaon Eryri. Bwriad yr awdur oedd dysgu mwy am y berthynas rhwng niferoedd y gwahanol rywogaethau a'r cynefinoedd amrywiol o fewn yr ardal hon. Y nod oedd deall yn well sut y mae gwahanol frain wedi ymateb ac addasu i weithgaredd dynol. Mae brain tyddyn, ydfrain a jac-y-do wedi manteisio ar bresenoldeb anheddau a thir amaethyddol; anodd yw dychmygu sut y gallai'r adar hyn, yn enwedig jac-y-do, fyw heb bobl. Ond mae'r frân goesgoch wedi dioddef oherwydd gweithgaredd dyn. Er y cysylltiad hir rhwng pobl a brain mae digon eto i ddysgu am yr adar hyn, sy'n ysgogi pob math o deimladau ynom - o fraw i ryfeddod.

Dolydd fy leuenctid

Maredudd Ap Rheinallt

Hanes ymgyrch gymunedol ym Mangor i warchod tir gwyrdd rhag cael ei ddatblygu a geir yn yr erthygl hon. Wedi brwydr faith, datgelodd arolwg ecolegol diweddar bod cynefinoedd prin a rhywogaethau newydd i'r sir yn bresennol yn ardal Eithinog a Chaeau Briwas, gan gadarnhau pwysigrwydd bioamrywiaeth y safle. Ond mae'r bygythiad yn parhau. Mae ***MAREDUDD AP RHEINALLT*** *yn dal i chwarae rhan flaenllaw yn y frwydr i warchod y caeau hyn.*

Brwydr Cymuned Gyfan i Warchod ei Hetifeddiaeth Naturiol

Unwaith y sefydlir bod safle penodol o bwysigrwydd naturiol, hoffem ni oll gredu bod strwythurau ar gael i sicrhau mai proses awtomatig wedyn yw i warchodaeth gael ei hestyn iddo. Y ceir cydweithredu ymysg cyrff statudol a gwahanol lefelau o lywodraeth i gynnal bioamrywiaeth anarferol, heblaw efallai pan fo ystyriaethau llawer ehangach yn ffafrio datblygu. A chyn hynny, bod proses drwyadl yn mynd rhagddi i ganfod y safleoedd prin hynny sy'n meddu ar dalp o'r cyfoeth byd natur oedd unwaith yn nodweddu'r rhan fwyaf o Gymru.

Ond sefyllfa ddelfrydol fyddai hyn wrth gwrs. I wahanol raddau, mae elfennau megis diffyg adnoddau ymysg y cyrff cadwraeth, blaenoriaethau gwleidyddol, anwybodaeth o ddeddfwriaeth berthnasol a diffyg ewyllys yn effeithio ar ein gallu i ddiogelu ein treftadaeth ecolegol.

Mae profiad cymuned yng ngorllewin Bangor, fodd bynnag, yn awgrymu bod problemau llawer mwy sylfaenol na hyn, ac yn wir y gallem, yn ystod y blynyddoedd nesaf, golli adnodd natur amhrisiadwy ar stepen ein drws cyn cael cyfle i'w asesu ac heb hyd yn oed i lawer ohonom sylweddoli ei fod yno.

Profiadau cynnar o fyd natur

O edrych yn ôl, hwyrach nad oedd fy mhrofiadau cynnar o fyd natur yn ardal Eithinog a Chaeau Briwas mor arferol â hynny. Ond ar y pryd, wyddwn i mo hyn. Mae cof plentyn gennyf o grwydro dolydd hirwelltog oedd yn llythrennol ferwi o löynnod gwrymyn y ddôl (nid bod yr enw'n wybyddus i mi bryd hynny, nac hyd yn oed wedi'i fathu eto debyg iawn). Deuthum i a chyfoedion yn gyfarwydd â madfallod, llyffaint a grifft tra'n rafftio moroedd rhyw ffos neu'i gilydd. Yna, hel rhedyn ffres aroglus ymysg clychau'r gog Coed Gorffwysfa ar gyfer llawr y 'den' diweddaraf. Crwydrem erwau lawer o'r coedydd a'r meysydd segur uwchlaw Pont y Borth yn ddilyffethair i bob pwrpas.

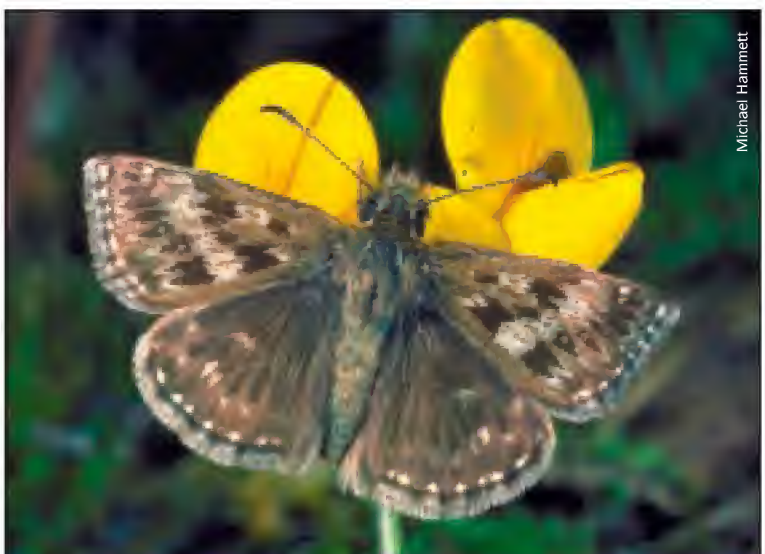
Yma y bwriodd fy mrawd, a aeth yn fachgen yn ddi-wahoddiad i weld Tunnicliffe yn ei elfen a chael croeso, ei brentisiaeth yn adara hyd y gwrychoedd a'r coed. Ei ddiddordeb bellach yw cofnodi niferoedd adar mordwyol arbenigol yn mudo heibio glannau Ynysoedd Heledd yr Alban. Doedd dim rhyfedd, wedi treulio rhan bwysig o fy mebyd ymysg rhyfeddodau newydd byd natur, i minnau ddatblygu ddiddordeb oes yn ein hetifeddiaeth naturiol. Cyrraedd fy arddegau a'r diddordeb yn crisialu - mae mapiau gennyf yn dangos pa mor gyffredin oedd glöyn y gwibiwr llwyd diflanedig yn 1981. Dichon mai yr un fu profiad a hanes cenedlaethau eraill o ieuenctid yn byw ar riniog yr ardal arbennig hon yng ngorllewin Bangor.

Dyma esbonio peth ar fy nghymhellion pan anfonais lythyr at y wasg yn 1994 yn dwyn sylw at y drychineb oedd ar fin digwydd gyda chynlluniau Cyngor Arfon i godi 280 o dai o un pen i'r caeau i'r llall. Un o'r cynlluniau datblygu perffeithiach-na-pherffaith 'tecâu'r amgylchedd' twyllodrus yna sydd mor hoff gan ein cynllunwyr.

Dechrau'r ymgyrch

Roedd mudiad newydd-anedig 'Y Ddaear yn Gyntaf' - pobl y protestiadau ffyrdd a choed - yn chwilio am achos newydd, wedi i'w hymgyrch gyntaf yn erbyn cae-pob-tywydd yn Nhreborth ddod i ben. Daeth aelodau i'm gweld, a threfnwyd cyfarfod cyhoeddus ar gyfer mis Awst 1994 i fesur y gwrthwynebiad lleol i'r dinistr oedd ar fin digwydd. Ffrwyth hyn oedd sefydlu mudiad cymunedol oedd yn gymysgedd o drigolion y cylch, myfyrwyr, naturiaethwyr ac ymgyrchwyr amgylcheddol.

Eiddo Cyngor Gwynedd yw'r rhan fwyaf o'r safle 50 erw. Prynwyd y tir yn y 1950au gan hen Gyngor Sir Gaernarfon, gyda'r amcan o ddiwallu peth o anghenion tai'r ddinas wrth iddi dyfu. Mae'n cynnwys tir dwy fferm, Tros y Canol (y Briwas) ac Eithinog, a dengys map asesiad degwm y 1830au na fu llawer o newid ar ffiniau'r caeau ers hynny. Ond er y bwriad gwreiddiol, erbyn y 1980au roedd gwerth ecolegol y safle, na phrofodd erioed yr arferion amaethu dwys sydd wedi anrheithio bioamrywiaeth cefn gwlad, wedi dod i sylw rhai o'r cyrff cadwraeth.


Michael Hammett

Y gwibiwr llwyd • the dingy skipper butterfly

Yn ôl y disgwyl efallai, gwerth ariannol eu heiddo sydd flaenaf ym meddwl awdurdodau'n sy'n cadw llygad ofalus ar eu

James Robertson

Tir glas sy'n doreithiog o fywyd gwyllt yn Eithinog a Chaeau Briwas • Wildlife-rich grassland at Eithinog and Brewery Fields.

mantolen gyllidol (Cyngor Arfon yn ein hachos ni), nid cysyniadau dielw am yr angen i ddiogelu ein treftadaeth naturiol. Ac o fewn rhai dyddiau i gael gwybod am yr ymgyrch oedd ar droed, cyflwynwyd cais am ganiatâd amlinellol a gwmpasai ran fawr o'r caeau.

Gweithredu uniongyrchol

Ar ôl y protestiadau (yn cynnwys un ar ben to'r Adran Dai), y deisebu, yr arolygon barn a'r lobïo, cyrhaeddodd yr ymgyrch benllanw pan ddaeth y teirw dur ar y tir, ar ddechrau Mawrth 1998, a hynny o fewn y cyfnod apelio ar gyfer cais diweddaraf pobl leol i gofrestru tir glas ('grîn') trefol.

Er bod y Ddaear yn Gyntaf wedi cymryd rhan lawn yn yr ymgyrch gonfensiynol ac wedi arwain yn achos y dulliau anghonfensiynol, roedd gofyn bellach i bobl weithredu rhai o'r tactegau oedd mor gyfarwydd o ymgyrchoedd fel Newbury a Twyford Down.

O fewn dim o dro, sefydlwyd gwersyll ar y tir ac atal y gwaith gwastatáu cychwynnol, ond nid cyn i swyddogion heddlu ddangos eu grym drwy arestio sawl un am roi pridd yng nghaban tŷ bach y gweithwyr! Dros y 3 wythnos nesaf, gyda chefnogaeth ddiail gan drigolion y fflatiau gerllaw, ceisiodd yr ymgyrchwyr baratoi ar gyfer y meddiannu disgwyliedig gorau y gallent. Roedd y gwynt rhyfeddol a chwythai'n nosweithiol gan ddymchwel y ffensiau terfyn a godwyd mor ddyfal yn ystod y dydd yn help, ond roedd angen mesurau llai goruwchnaturiol na'r rhain.

Tyllau yn y ddaear, wedi'u llenwi â choncrid wedi'i atgyfnerthu â darnau o haearn, yw 'lock-ons'. Gosodir peipen yn y concrid a gall unigolion roi braich ynddi a chloi neu gysylltu eu garddwrn mewn bar. Yn y modd yma, ni ellir eu symud o'r safle ond o'u gwirfodd neu drwy waith cloddio gofalus ac araf. Neu dyma'r egwyddor beth bynnag.

Ond, fel yr eglurwyd gan yr heddlu ar newyddion S4C, y dacteg a ddefnyddiwyd ganddynt i argyhoeddi'r ymgyrchwyr i ddatgloi oedd 'rhoi pwysau ar rannau penodol o gyrff y protestwyr'. Cliriwyd y safle o fewn dwyawr, heblaw am un dyn, 'Spiderman', fu'n ddigon ffodus i ddewis dringo i'r coed pan gyrhaeddodd y fflyd cerbydau tywyll ben bore. Cyhoeddwyd erthyglau ar y dulliau a ddefnyddiwyd yn y Guardian a phapurau eraill yn fuan wedyn.

Yr ail wersyll

Prun bynnag, o fewn dim, sefydlwyd ail wersyll - mwy hirhoedlog - i geisio atal ffordd fynediad newydd i Ysgol Friars a fyddai ar yr un pryd yn hwyluso datblygiad gweddill y caeau. Y tro yma roedd gwrychoedd a

chloddiau aeddfed gyda choed deri, ynn ac afalau surion yn ffordd y teirw dur, ac er y dinistr a fyddai'n digwydd oherwydd y gwaith, o leiaf byddai mwy o gyfle i amddiffyn y safle. Bu'r gwersyll mewn bodolaeth am rai misoedd cyn iddo gael ei glirio; arestiwyd 20 o bobl yn y broses. Gallaf hawlio gosod ryw fath o gynsail drwy fod yn 'Swampy' cyntaf Gwynedd, a threulio 24 awr hir dan ddaear mewn twnnel cyfyng, a fu dan ddŵr tan yn fuan cyn hynny oherwydd y tywydd.

Gwarchodfa natur

Yn y cyfamser, cyhoeddodd y cyngor gynlluniau'n amlinellu'r posibilrwydd o greu gwarchodfa natur gymunedol ar ran ganolog y safle - yn cwmpasu dau gae ac ychydig ddarnau digyswllt. Cafwyd datganiadau pendant gan lefarydd yn addo y gweithredid y cynlluniau hyn (mwy am hyn yn nes ymlaen). Er yn gam ymlaen, a'r tro cyntaf i werth ecolegol gael ei gydnabod wedi pedair mlynedd o ymgyrchu, yr hyn a'm trawodd - ac nid am y tro olaf - oedd y diffyg ymwybyddiaeth o'r modd y mae systemau naturiol yn gweithio. Byddai gwernen a choed gwlyb yn y darn gwarchodedig yn cael eu rhannu'n ddwy gan ffordd, a'r dalgylch dŵr a gynhwysai ffosydd a gweddillion cynefin rhostir iseldirol sy'n frith o degeirianau brych, cribau san ffraid a chlafrllys gwreidd-don yn diflannu dan goncrid.

Fel y daeth yn amlwg, diffyg adnoddau i gyllido'r datblygiad oedd y prif reswm pam na wireddwyd y cynllun dros y blynyddoedd nesaf - ar gwaetha'r arian sylweddol y byddid yn ei dderbyn o werthu gweddill y tir i ddatblygwyr, a chyfraniad hael yr awdurdod i lwyddiant cynlluniau tebyg mewn cymunedau eraill.

Erbyn 2002, a chyhoeddi drafft cyntaf Cynllun Datblygu Unedol newydd y sir ar gyfer y cyfnod hyd at 2016, bu gostyngiad eto yn y tir oedd i'w ddatblygu. Ymgorfforwyd rhai o argymhellion yr ymgyrchwyr yn y map, gan gynnwys gwarchod y rhan fwyaf o'r gwlypdiroedd a dileu'r ffordd fynediad ddinistriol drwy goed gwlyb Ysgol y Garnedd.

Yn 2003 roedd gwarchodfa natur gymunedol yn dal i gael ei thrafod, ond yna bu newid meddwl oherwydd

Gaynor Ainscough

y sefyllfa amhosib o geisio sefydlu gwarchodfa heb fod unrhyw adnoddau ar gael ar ei chyfer.

Torri addewidion

Ar gwaetha'r addewidion bum mlynedd ynghynt, ym mis Hydref 2003 cymeradwyodd Pwyllgor Cynllunio Arfon fap newydd fyddai'n golygu datblygu mwy o'r caeau nag hyd yn oed ym Mriff Datblygu 1994. Wedi rhybuddion gan swyddogion y byddai rhaid ymwroli yn wyneb gwrthwynebiadau anorfod ond y gellid ennill y dydd o sicrhau 'balans rhwng datblygiad ac amgylchedd o safon' [sic.], penderfynodd Bwrdd y Cyngor fabwysiadu'r Drafft Adneuo ym mis Mai 2004, a chyhoeddwyd y cynlluniau ar gyfer 250 o dai ar hyd a lled Eithinog a Chaeau Briwas y mis dilynol.

Bu'n rhaid atgyfodi'r ymgyrch mewn byr o dro. Cafwyd dros 300 o wrthwynebiadau ffurfiol yn ystod y cyfnod ymgynghori, o du'r Cyngor Cefn Gwlad, Ymgyrch Diogelu Cymru Wledig, y Gronfa Natur Byd-Eang, Cyfeillion y Ddaear, Cyngor Bangor, Cyngor Pentir, Plaid Cymru, Cymdeithas Ddinesig Porthaethwy a'r Cylch, ond yn bennaf oll gan ganran fawr o ddefnyddwyr beunyddiol y caeau gyda'u mwynhad o'r harddwch naturiol oedd yn y fantol. Nid yw eu diffiniad nhw o 'amgylchedd o safon' yn cydsynio ag un Cyngor Gwynedd, yn amlwg. Mewn cyfarfod â'r cyngor ym mis Gorffennaf, yn sgîl y pwysau hwn, sicrhaodd cynrychiolwyr yr ymgyrch addewid y byddid yn cynnal arolwg ecolegol fel rhan o'r broses o symud tuag at ffurf derfynol y cynllun.

Arolwg Natur

Ddechrau 2005, cyhoeddwyd canlyniadau rhan gyntaf yr arolwg natur, gyda chadarnhad ysgubol o'r hyn y bu ardalwyr yn ei ddadlau'n ddi-fudd ers 11 mlynedd, fod yma enghraifft brin o dir amaeth traddodiadol nad effeithiwyd nemor ddim arno gan newidiadau yn nulliau ffermio'r 50 mlynedd diwethaf. Ffurfiai'r gwead cynefinoedd, yn laswelltir niwtral, glaswelltir asid ar hyd y cribau, dolydd gwlyb yn y darnau isel, coedydd, prysg, gwern a chors, adnodd naturiol prin, Tybiwyd y gellid rheoli'r glaswelltir niwtral i greu un o'r darnau mwyaf o ddolydd blodeuog traddodiadol yng Ngwynedd. Mor brin yw'r cynefin hwn - cofnodwyd 30 hectar ohono yn unig yng Ngwynedd gyfan - fel bod ei adfer yn un o flaenoriaethau cynlluniau gweithredu bioamrywiaeth ar bob lefel o lywodraeth. A bernid mai dyma'r safle mwyaf addawol yn y sir i weithredu, cyfle i sicrhau cynnydd o hyd at 20% yn arwynebedd y math yma o dir.

Canolbwyntiai ail hanner yr arolwg ar rywogaethau. Datgelodd y canlyniadau bresenoldeb poblogaeth ranbarthol bwysig o wyfynod glaswelltir sych (gydag un ohonynt, *Perizoma albulata*, ar y Rhestr Goch oherwydd iddo ostwng 96% yn y cyfnod 1968-2002). Roedd y cyfoeth yn cymharu â'r hyn a geir mewn rhai Gwarchodfeydd Natur Cenedlaethol. Canfuwyd hefyd gasgliad o ffwng glaswelltir nodedig, yn cynnwys *Hygrocybe punicea*, rhywogaeth brin sy'n gyfyngedig i, ac yn nodweddiadol o, hen laswelltir heb ei wella.

Mae 'sgôr' rhywogaethau ffwng 'CHEG' y caeau yn awgrymu y gall fod y safle o bwysigrwydd ar lefel y DU, ac yn cyrraedd darpar feini prawf SoDdGA. Mae darpar gynllun gweithredu Natur Gwynedd ar ffwng cap cwyr, sy'n pwysleisio adfer ac ymestyn cynefinoedd addas, yn nodi hefyd bod y ffwng pwysig *Hygrocybe spadicea*, yn tyfu yma yn ei unig safle o fewn ardal y cynllun. Mae'n debyg fod yma hefyd enghraifft o'r griafolen wen leol, *Sorbus arfonensis/robertsii* (nomen nudum), nad yw eto wedi'i disgrifio'n llawn. Canfu'r arolwg ecolegol nifer o rywogaethau o ffwng ac infertebratau sy'n newydd i Ogledd Orllewin Cymru ac Is-sir Gaernarfon, neu yn eu hail neu drydydd safle, gyda'r awgrym y gall fod llawer yma eto i'w canfod.

Y bygythiad yn parhau

Ond ni dderbyniwyd holl argymhellion yr adroddiad na barn ddiweddar swyddogion bioamrywiaeth y cyngor. Mae'r cynlluniau datblygu yn parhau i gwmpasu 2.8 hectar o laswelltir sensitif a 250 m o wrychoedd a chloddiau y bernir bod ymrywmiadau bioamrywaieth a deddfwriaeth yn eu diogelu. Gallai gwerth ecolegol hyd at 50% o'r glaswelltir niwtral gael ei golli, a byddai datblygu'r gwrychoedd a'r tir agored gerllaw yn effeithio, er enghraifft, ar y pum rhywogaeth o ystlumod sy'n hela yma, a'r coch y berllan yn un o'i safleoedd gorau yn Arfon a Dwyfor o ran nifer y parau. Ac mae'r ddôl glafrllys hyfryd yn dal o fewn y ffin ddatblygu. Yn eu hymateb swyddogol

C-fn gwlad hynafol, digyffwrdd yn llawn o gaeau bach a gwrychoedd uchel
Ancient, unspoilt countryside of small fields and high hedges

Maredudd Ap Rheinallt

i wrthwynebiadau, dywed Cyngor Gwynedd bod yr angen am safle i ddatblygu tai yn bwysicach na'r polisïau bioamrywiaeth fydd yn cael eu torri.

Mae llawer o waith eto i'w wneud yn amlwg cyn y caiff natur a'r amgylchedd eu lle priodol yn ganolog ym mhob maes polisi awdurdodau lleol. Ond yn y pen draw, mae ein cynrychiolwyr yn adlewyrchu ein blaenoriaethau ni fel cymdeithas. Hyd nes y daw tro ar fyd yn ein hagwedd tuag at ein hamgylchedd, parhau i ddirywio wnaiff ein hadnoddau naturiol, waeth faint o gytundebau bioamrywiaeth rhyngwladol a lofnodwn.

Parhau i ymgyrchu • The campaign goes on

Elfen gyson drwy'r ymgyrch fu gwerthfawrogiad y gymuned o'r byd natur sydd ar stepen ei drws. Dywedwyd wrthyf droeon gymaint o bleser a geir o weld yr hwyaid gwyllion gyda'u nyth yn y ddôl wleb, neu'r tegeirianau brych sy'n cynyddu'n raddol. Nid oedd ots am y datblygiad oedd i ddigwydd dros y ffordd ond i'r safle hwn gael ei warchod. Heb y brwdfrydedd cymunedol yma tuag at ein hetifeddiaeth naturiol, byddai'r rhywogaethau prin sy'n dechrau dod i'r amlwg, a darn mawr o'r SoDdGA posibl, wedi hen ddiflannu dan haen o goncrid.

Sawl Eithinog a Chaeau Briwas arall sydd yna tybed - tir fferm a adawyd yn segur ers degawdau yng nghyffiniau ein trefi gyda'r bwriad o'i ddatblygu; ond heb dystion efallai i'w gyfoeth naturiol nac adfocad i atal y teirw dur?

A minnau yn fy neugeiniau bellach, mae to arall o blant Bangor yn awr yn cael synnu a rhyfeddu at fywyd gwyllt y caeau hyfryd hyn. Ac er fy nghyfareddu'n ddiweddar gan sŵn udo hyddod yn diasbedain ar noson loergan rynllyd yn Fforestydd y Landes, a chael cip ar y bele swil liw dydd, fy ngobaith rhyw ddydd yw cael gweld y gwibiwr llwyd di-nod yn dychwelyd i ddolydd fy ieuenctid.

Cyfieithydd 41 oed o Fangor yw ***Maredudd ap Rheinallt****, sydd â diddordeb cyffredinol mewn byd natur a'r amgylchedd. Mae hefyd yn achyddwr, cerddwr a beiciwr brwdfrydig, ac y llynedd bu ar daith seiclo 2800 milltir i Santiago de Compostela ac ymlaen i Gibraltar. Mae yn or-wyr i'r arweinydd eisteddfodol Caerwyn.*

Meadows of my youth

Early experiences of wandering through Brewery and Eithinog Fields, wildlife rich land at the edge of Bangor, were instrumental in developing **Maredudd ap Rheinallt**'s passion for the natural world. Although the land was purchased and earmarked for development by the local authority in the 1950s, plans for a large housing estate met with fierce opposition when they emerged in the late 1990s. The campaign has been long and sustained. It has brought together local community and environmental protesters, and has involved a mixture of lobbying, petitioning and direct action. Recent surveys, undertaken in response to the intense local concern about the future of the site, clearly demonstrate that the land has significant biodiversity value, comprised of a mosaic of different and increasingly uncommon habitats, as well as a number of notable species. The site's future, however, is still uncertain - and the battle goes on.

Bats and fishermen both enjoy the dusk and occasionally they may have an inadvertent close encounter! ***RICHARD DODD*** *gives more information about bats and explains what to do if you catch one while fishing.*

Michael Hammett

Angling and bats

Whiskered bat

So, there you are at the beginning of the angling season, putting on your first team of flies and practising your new casting techniques, when no sooner do you cast out than you get a bite. All that hard work has paid off in an instant. However, you notice that the line is moving strangely, so you start to reel in and gaze towards the end of the line and realise that what you've got is a bat!

Lure of the line

Believe it or not, a lot of bat conservationists are also keen anglers. It must be the dark that excites them - the anglers that is - as well as the graceful flight patterns and lure of the line. I have to admit right away that I'm not an angler and know little about the sport, other than recognising the enormous range of skills involved. However, countless tales are recited to me by anglers about the times bats have been seen swarming around bridges and trees, crawling on river banks, or getting caught on the line, albeit accidentally. Daubenton's bats in particular are frequently seen skimming the surface of rivers, ponds or other water bodies at dusk.

There are 17 bat species in the UK: the commonest are common and soprano pipistrelles, which measure just 4-5cm in length and are the bats most likely to be seen flitting around in the garden or roosting in houses. The rarest is the greater mouse-eared, which until recently was considered extinct in the UK: the same individual has been found hibernating in Sussex over the past few winters, though it's hard to know whether it has re-established or has always been here - we just didn't find it. Also, one individual does not mean that there is a breeding population.

Bats in the UK eat only insects, which they catch in flight or pick off water, foliage or the ground. The pipistrelle can eat up to 3,000 midges in one night - one-third of its body weight! Daubenton's bats take insects, particularly chironomid midges and mayflies, from close to the water surface. They are medium-

sized bats (45-55 mm long, with a 240-275 mm wingspan and weighing 7-12 g), with a steady flight pattern, flying at approximately 25 kph, often within a few centimetres of the water surface. They have even been seen taking prey directly from the water surface, using their large feet as a gaff or their tail membrane as a scoop. They usually feed within 6 km of the roost but have been recorded following canals for up to 10 km. Their old name of 'water bat' is quite appropriate, though they often travel across land and occasionally feed away from water.

Daubenton's bat

All bats are able to fly and feed in the dark by producing a stream of high-frequency calls and listening to the returning echo-location which give a distinct 'sound picture' of their surroundings. This is called echolocation. These calls can normally only be heard by humans through use of high frequency equipment such as an electronic bat detector.

Precautions

Despite this amazing ability to fly in the dark and catch tiny insects moving amongst the branches and leaves, bats occasionally mistake artificial fishing flies for the real thing. Often it's a wingtip or the tail membrane that gets caught as you are casting, but occasionally bats are hooked in the mouth. So what do you do next? First of all, don't panic. Whilst there is a small risk that bats may carry rabies, there are simple steps you can take to protect yourself and others.

If possible, try to 'land' the bat on the riverbank where it may be able to free itself from the line. Do not allow a hooked bat to continue flying around on the end of a line for longer than is necessary and if it does not free itself within 2-3 minutes you may wish to cut the line close to the fly.

Avoid touching the bat with bare hands. Rabies can be transmitted through a bite or scratch from an infected bat or through contact between its saliva and an open wound or the mucous membranes of your eye, nose or mouth. If you need to handle the bat (alive or dead), wear protective gloves or wrap as much of the bat as possible in a cloth, especially the head and mouth. If you think you may have been bitten or scratched, wash the wound immediately and thoroughly (preferably with soap and water, and without scrubbing) and speak to your doctor as soon as you can - effective post-exposure vaccination is available, provided this is administered soon after infection.

At this stage, or at any time if you are unsure of what to do, you can contact the Bat Conservation Trust helpline for advice.

Rabies in the UK

It is recognized that some bats in Europe do carry a rabies virus called European Bat Lyssavirus (EBLV). This is different from classical rabies, which has never been found in a bat in Europe, and has two different strains; EBLV1 and EBLV2.

Over the past 18 years, the Veterinary Laboratories Agency has tested almost 6,000 dead bats for the presence of EBLV; only four were shown to be carrying live rabies virus. All of these cases, in Sussex (1996), Lancashire (2002 & 2003) and Surrey (2004), were Daubenton's bats carrying EBLV2. Recent research on live bats in England and Scotland (a survey in Wales has not yet been

BCT

Pipistrelle caught on a fishing hook

commissioned) did not record any bats testing positive for the live virus, though a proportion did show the presence of antibodies, suggesting they had been exposed to rabies virus sometime in the past. Fishermen can help improve our understanding of rabies in bats; if you find a dead bat please contact BCT so we can arrange for it to be tested. The discovery of EBLV in UK bats does not affect the UK's rabies-free status.

The risk of catching the virus from a bat is extremely low. Any human contact with bats is rare, even when they share the same buildings. As EBLV is only transmitted by a bite or scratch or though contact with saliva, there is no risk to people if they do not approach or handle a bat. Bats are not aggressive although, like any wild animal, if handled they may bite to defend themselves. A bat that appears to be baring its teeth is actually 'scanning' you by echolocation.

Conservation

Due to a significant decline in numbers over the past few decades, mainly through loss of habitat and disturbance, all bats and their roosts are protected by the law. In summary, it is illegal to kill, injure, take or disturb bats, or to damage, destroy or obstruct access to bat roosts because of the following legislation:

• **Wildlife & Countryside Act 1981** provides protection for all bats and their roosts and requires consultation with the Countryside Council for Wales before carrying out activities that might harm or disturb them.

• **Countryside & Rights of Way (CRoW) Act 2000** adds the word "reckless" to the offence of disturbing a bat or damaging / destroying / obstructing a place a bat uses for shelter. This is important legislation because it protects bats and roosts from reckless and/or intentional disturbance/damage.

• **The Conservation (Natural Habitats, &c.) Regulations 1994** (otherwise known as the **Habitats Regulations**). Under this legislation it is an offence to damage or destroy a breeding site or resting place of any bat, or to deliberately capture, kill or disturb a bat. Most development and maintenance works affecting bats and/or roosts e.g. bridge/tree maintenance works, demolition, barn conversions, works to churches etc, therefore require a Habitats Regulations Licence for work to take place legally. The licence must be applied for and obtained from the Assembly Government before work begins.

Bat Conservation Trust

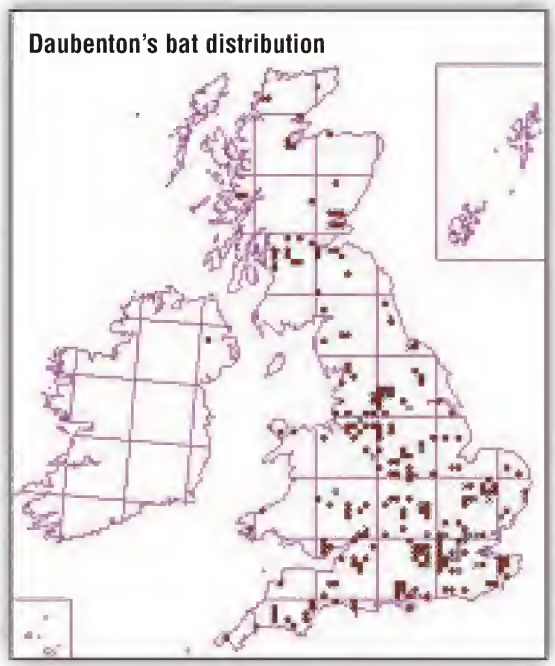
The Bat Conservation Trust (BCT) is the only national organisation solely devoted to the conservation of bats and their habitats in the UK. Through 95 local bat groups and 1,000 bat workers, we survey roosts and hibernation sites, and work with householders, builders, farmers and foresters to protect bats. Monitoring is essential, as it would seem that many of our bat species have declined dramatically over the last 60 years. The data collected allow us to identify population changes and assess the bats' conservation needs. Resources can then be directed to where they are most needed.

It's not all bad news: despite severe loss of and damage to wetlands and waterways, the Daubenton's bat seems to be increasing in parts of its range. This may, in part, be associated with increasing numbers of artificial water bodies, including gravel pits, reservoirs and flooded quarries. Also, a low level of pollution may encourage a more consistent supply of certain chironomid midges. In 2005, 257 volunteers carried out a Waterway Survey at 319 sites. This involved walking along a 1 km stretch of waterway and counting Daubenton's bat passes. The species was recorded at 259 sites (81.2% of sites surveyed). However, the loss of diversity of aquatic insects has a detrimental effect

on other species and, without careful pollution controls, this could also affect Daubenton's bat. The removal of waterside trees and disturbance to hibernation sites could also lead to declines.

Fishermen can help conserve bats by taking part in our surveys. For more information contact the Bat Helpline on 0845 1300 228; this also provides advice for all who come into contact with bats. More information can also be found on **www.bats.org.uk**

(caption)



***Richard Dodd**, as Welsh Bat Officer for the Bat Conservation Trust, supports and promotes the work of bat groups and bat workers and raises awareness of bat related issues to various sectors, including the building industry across Wales.*
Tel: 029 2036 2531.
E-mail: rdodd@bats.org.uk

Pysgota Ystlumod

Gall ystlumod y dŵr gael eu twyllo weithiau gan blu genweirio, wrth iddynt hela'n isel dros afonydd. Mae'r erthygl yn cynnig cyngor ynglŷn â'r hyn sydd angen ei wneud os bydd ystlum wedi ei ddal yn sownd mewn lein bysgota.

Rhaid cymryd gofal wrth drin a thrafod ystlumod, nid yn unig am eu bod yn greaduriaid sy'n cael eu gwarchod yn gyfreithiol ond hefyd am fod rhai ohonynt yn cario ffurf ar feirws y gynddaredd. Ond yn ystod arolwg diweddar, canfuwyd nad oedd unrhyw ystlum yn cario'r feirws, er bod rhai ohonynt yn cario'r gwrthgorffynnau, ac mae'r erthygl yn egluro'r rhesymau posib am hyn. Mae'r risg o ddal y feirws yn isel iawn - dim ond gyda brathiad y gall gael ei drosglwyddo a gellir trin y feirws yn llwyddiannus, os gweithredir yn sydyn.

Er dirywiad a diflaniad gwlypdiroedd naturiol, mae ystlum y dŵr ar gynnydd mewn sawl ardal. Mae'n bosib mai dyfroedd glanach a phresenoldeb cynefinoedd gwlyb artiffisial, fel pyllau graean, sydd i gyfrif am hyn.

Outside the walls and into the field

Then and now

Monica Jones

Class photos: Jan Martin

Aberystwyth

Few countries can rival Wales as a place to experience nature, and to study it. With a proud track record behind it, the University of Wales Aberystwyth is developing its courses in field biology and conservation, and pleasing its students of all ages, as ***JAN MARTIN*** *explains.*

The University of Wales Aberystwyth is home to the oldest 'extra-mural' education in the UK. These days the term is out of favour: 'beyond the walls', suggesting that those of us within the university occupy ivory (or in Aberystwyth probably gothic stone) towers, occasionally deigning to enter the community to graciously distribute our academic knowledge. We are now Lifelong Learning and occupy a prominent place in The School of Education and Lifelong Learning, which is indeed situated behind the impressive façade of Old College on the seafront in Aberystwyth.

However, despite the name change (and there have been quite a few over the years), we still venture beyond the walls, and never more than in our courses in conservation and field biology. The department has a tradition of offering natural history courses: I remember attending a day school about Ynys Enlli perhaps 20 years ago, and many Aberystwyth residents have happy memories of other such courses. But education has moved on and our remit now is to deliver higher education on a part-time basis.

Conservation

When I joined the department five years ago, there was a Diploma course entitled *Managing Land for Nature Conservation*. If you look in our brochure, you'll still find it there, although somewhat changed. At the time this was the only fully accredited diploma within the department and it was incumbent on me to see that it continued and was developed. This has been the case, and now there are about 40 modules to choose from and the opportunity, on completion, to continue on to one year of full-time study in the Institute of Rural Sciences, to convert the Diploma into a BSc. The subjects available include ecology, geology and soil science and move on to more in-depth areas such as habitat restoration, environmental impact assessment and landscape archaeology, culminating in a short research project in which learners investigate a subject in which they have a particular interest.

Field Biology

As I settled in to the department, I came to appreciate the rich tradition of natural history which the University has provided and to realise what a wonderful resource we had in our tutors and in the surrounding landscape. In recent years the teaching of taxonomy has disappeared from the majority of UK universities, and almost no higher education institutions teach identification skills to any extent. So, in 2003 we launched the *Certificate of Higher Education: Field Biology*. Centred around five compulsory courses, covering plant and animal taxonomy, plant identification and habitat survey, the scheme now includes identification courses in ornithology, lower plants and invertebrates as well as teaching specific survey techniques, such as butterfly transects and bird survey. In addition, supporting subjects are available, including conservation, statistics and animal behaviour. The range of courses continues to grow as tutors share more of their expertise and as new tutors join us. The learners tell me that this is wonderful, because they never seem to run out of subjects to study!

The results

Studying part-time, it is possible to complete a

diploma in four years or a certificate in two years, and a number of participants have been successful in achieving one or other of these. Last year was the soonest anyone could have finished the Field Biology Certificate, and indeed three dedicated learners did. I'm pleased to say that they are all hooked now and are continuing with their studies, each with the intention of achieving a diploma. Having said that, lots of participants come and enjoy just one module with us, and there is no compulsion to accumulate enough for a specific qualification.

Although a certificate is no guarantee of employment, a number of our learners have gone on to work in conservation and I hope that this is, at least in part, as a result of their studies with us. In addition, a number of our learners already work in environmental organisations, but are brushing up or broadening their skills. We have participants who are land owners themselves and want to know what they have on their patch, or how to manage it with conservation in mind. And, of course, we have people who attend the courses simply because they are interested.

People

Perhaps my favourite story is that of Philip Hughes, who came to study one course on marine biology about five years ago. At the time he was adamant that he had no interest in gaining a qualification or doing anything 'academic', and that he was just going to study the one module. The class was in the

morning, and the other students who were there, keen to study for the whole diploma, talked him into going to another class in the afternoon, this one on environmental law. And now Philip is studying his final module to gain his diploma, and working as the Chairman and Research Officer of Friends of Cardigan Bay. In his own words:

'These days I can now find myself being asked to attend scientific meetings, writing research reports and liaising both with government departments and the general public - things I could not have done without the education that I have received.'

Philip's interest in the Sarnau in Cardigan Bay have been a driving force in stimulating the recent research into these fascinating marine features, described by Joanne Porter in the last issue of *Natur Cymru* (no.18 DP 29-32).

Of the other learners who were there that first morning with Philip, one completed his diploma last year and two are working on their final projects as I write this. Of course, people come and go from the programme: one of our learners who was about two thirds of the way through a certificate got a job with the National Trust. I don't want to give the impression that was a direct result of his studies with us, but it can't have done any harm! Sadly, he is so busy now that he hasn't managed to come back and complete his studies.

Those in the best position to explain the value of the courses are the learners, so here are things some of them have to say:

Despite my initial apprehension of returning to education, I'm really glad that I did. Studying for the Certificate in Field Biology has enabled me to achieve a personal goal and has helped change the direction of my career. I would thoroughly recommend it to anyone wishing to fulfil either a personal or professional ambition. I can guarantee that once you've done one module, you'll want to do them all.
Susan Roberts (awarded the Certificate in Field Biology in 2005)

From field trips and reference to local sites to global aspects of development, the effects on the natural environment may all come within the remit of various modules. Add to this a relaxed atmosphere, enthusiastic and knowledgeable lecturers, students with their own experience and know-how and free access to the University library and computers! It has certainly helped me, given pointers and opened my eyes to some aspects of nature conservation that I had previously neglected.
Roy Bamford (about to complete the Managing Land for Nature Conservation Diploma)

The course has given me a better understanding of the landscape and land use in the countryside, and of why different habitats exist and how they can be maintained. This is a great course for anyone interested in conservation issues.
Lynn Williams (studying for the Managing Land for Nature Conservation Diploma)

Places

The courses are firmly rooted in Wales and the Welsh environment; course titles such as *The Geological History of Wales* and The *Diversity of Invertebrates in West Wales* clearly reflect this. The majority of fieldwork is, of course, conducted within west Wales, but we try to set this in a regional and global context, so that courses do have a wider applicability. We do have one field trip that takes us away from Wales, to the Burren in Ireland - an opportunity to experience limestone habitats on a scale not possible locally. Recently, we have developed close links with other environmental organisations in Wales. In the coming year we will be offering courses in conjunction with Denmark Farm (lower plant identifica-

tion is planned for the autumn), the Centre for Alternative Technology and the Youth Hostel Association (including a number of courses relating to sustainability). Such courses will be run intensively over three or four days, to allow learners from further afield to attend.

A more established link is with the Wildlife Trust for South and West Wales. Over the past year we have run a number of successful courses at the Wildlife Centre in Cilgerran, and more will be available in the future. The centre has proved popular with tutors as well as learners:

As the Teifi meanders very close to the Welsh Wildlife Trust Cilgerran Centre, it gives us the most appropriate background for the discussions we have in the Geography and Environmental modules. The education centre is a welcoming room which is very central, allowing a mix of class and field based activities which have allowed us to observe and analyse how the Teifi has made its own mark on the landscape as well as relating to other processes. The Centre itself also gives a wonderful vantage point to discuss the landscape even when we are in class.
Andrew Crossley (Tutor)

Courses and locations continue to be developed; learners continue to gain knowledge and go on to apply this in a variety of ways and at different scales; and the University continues with its long-standing commitment to environmental education… outside the walls, into the fields and even up mountains!

For further information about the courses available, contact **learning@aber.ac.uk** or telephone **01970 621580**.

Dr Jan Martin *is the Director of Lifelong Learning in the School of Education and Lifelong Learning, University of Wales Aberystwyth. She is also an ecologist, with particular interest in land restoration, and teaches related courses.*

Gorau arf - addysg amgylcheddol

Mae Prifysgol Cymru Aberystwyth yn cynnig cyfleoedd ysbrydoledig i fyfyrwyr o bob oedran i ddysgu mwy am fywyd gwyllt, am ddaearegg a thirlun ac am agweddau gwahanol ar reolaeth yr amgylchedd.

Mae rhai o'r cyrsiau a gynigir yn llenwi bwlch amlwg, drwy ddysgu pobl i adnabod planhigion a chreaduriaid - y math o addysg sydd wedi diflannu, mwy neu lai, o brifysgolion y DU. Mae'r amrywiaeth o gyrsiau'n cynyddu drwy'r amser ac mae cymysgedd dda o bobl yn eu mynychu, gan gynnwys perchnogion tir sydd am ddysgu mwy ynglŷn â'r hyn sydd ganddynt o'u cwmpas adre. Mae nifer o'r myfyrwyr wedi llwyddo canfod swyddi ym maes yr amgylchedd ar ôl bod wrthi'n astudio. Ond pwysicach na hyn, efallai, yw'r mwynhad amlwg y mae'r myfyrwyr a'r tiwtoriaid yn ei gael o'r cyrsiau hyn.

Monica Jones

The song of the **woodlands**

At dawn or dusk, the appeal of a wood in spring owes much to the melodious songs of those birds like the wood warbler, tree sparrow, redstart, tits and flycatchers, which thrive in woods. Their numbers have been falling, and we need to know why if we are going to continue enjoying their presence in years to come, as ***PATRICK LINDLEY*** *explains.*

Firecrest

As the title suggests, the appeal of woodland birds comes not only from the beauty of the birds themselves, it also comes from their song. If you have risen early on a spring morning before the milk arrives, you may have experienced the inspirational joy of their singing. The unparalleled delight of a dawn chorus, within a Welsh wooded hillside, begins in earnest in the small hours with the robin and great tit. By the time the first rays of sunshine filter through the canopy, the cacophony of warbler, pipit and thrush song reaches an orchestral staccato reminiscent of cicadas in a Mediterranean woodland. To witness such a burst of biological energy is an under-valued experience.

A cause for concern

It would be a tragedy is our woods fell silent, and the sweet song of the wood warbler no longer echoed through the trees. Yet a number of birds partially or mainly associated with woodlands seem to be in decline. Most of us are now aware of the falling populations of once common lowland farmland birds, such as those associated with arable and grassland systems: this has stimulated a decade of research to understand the causes. Sadly, there is also a race on to understand why woodland birds are in decline. As a consequence, the ecology of various woodland birds is now being studied more intensively than ever before.

A traffic light system highlights birds of conservation concern and is a tool for prioritising conservation action (red - declining, action required; amber - stability, caution; green - increasing, no action required). There has been a worrying trend in woodland species moving from the amber to the red

Steve Round

Kirsty Ward

Coal tit

list. On the red list in Wales are the turtle dove, lesser spotted woodpecker, marsh and willow tit, starling and bullfinch. On the amber list are woodcock, nightjar, redstart, firecrest and spotted flycatcher. There is evidence of recent (post 1997) serious declines in several of these species, and of one or two species not listed, notably the wood warbler and pied flycatcher.

Conservation status is determined by monitoring abundance (numbers) and range (geographical distribution), to show a combined trend for a range of species. In the UK, woodland birds have shown a 20% decline among a suite of 33 species over the last 25 years. In Wales the National Assembly is committed, by 2010, to have stabilised or reversed trends in the populations of wild birds.

Annual data for 26 species from BBS (Breeding Bird Surveys conducted by BTO/JNCC/RSPB) shows little evidence of numbers increasing in the short-term, but this does not include the majority of the less widespread and declining birds, as they are recorded in fewer than 30 BBS squares. We may therefore have a wrong impression of the true health of Welsh woodland birds, particularly long-distance migrants such as wood warbler and pied flycatcher, or residents such as marsh and willow tit.

The findings of the Repeat Woodland Bird Survey (RWBS), a four-year project which investigated trends in breeding bird populations in British broadleaved and mixed woods, support our growing concerns about UK declines as detected by national monitoring schemes. The survey showed large UK declines (over 25%) for: garden warbler, lesser redpoll, lesser spotted woodpecker, spotted flycatcher, tree pipit, willow tit, willow warbler, wood warbler and hawfinch.

Why are woodland birds declining?

To understand this we need to look at the woodland structure and its importance, particularly to niche specialists.

Most Welsh woodlands have been altered significantly by centuries of management, and the woodland

Michael Hammett

Marsh tit

structure has developed in response to this. Plant communities can be divided into different layers or zones; the canopy of mature trees, the shrub layer of low growing scrub species, a field layer of forbs, ferns and grasses and the ground layer consisting of bryophytes and leaf litter. These zones, often in flux towards secondary woodland, are important at the species level. The dominant tree species in a wood influences the understorey and therefore the types and density of bird communities. For example, a lush oak wood in Wales could potentially support high populations of a diverse spectrum of species, such as blackcap, lesse spotted woodpecker, pied flycatcher, wood warbler, redstart and tree pipit. In contrast, recently planted exotic Sitka spruce forests attract a smaller suite and density of bird species. Woodland birds follow the same niche processes as other species: adaptation, specialisation and generalisation. Tit species show a range of morphological differences according to woodland type. Coal and crested tits, which predominate in conifers, have relatively long and narrow bills compared to their broad-leaved living cousins, marsh and great tits. If woodland structure changes, this may harm specialist woodland birds which cannot adapt quickly.

Many woodland birds take advantage of trees and shrubs for shelter, protection and nesting sites, but require more open areas for feeding. For this reason scrub is often a good habitat, providing cover and nest sites, but including open areas rich in seeds and invertebrates. Scrub has had a bad press in recent years. It was once a common habitat by default, springing up when agriculture went into decline, or when land was neglected. The decline of the railways meant that railway sidings often became scrubbed up, but the ephemeral nature of the habitat, which rapidly turns to full-blown woodland, and the pressure on land for development, have reduced the amount of scrub available to birds such as the willow warbler.

Wood warbler

Steve Round

Wood edge is a similar habitat, allowing birds to gain the benefits of both trees and grassland. Unfortunately, grassland management has become much more intensive in recent years. Fields are often ploughed to their limits, with little or no uncultivated margin to buffer against agricultural pesticides penetrating the woodland edge.

The same kind of problems may be occurring within the woods themselves, as woodland management declines and the canopy closes. All these changes will affect food availability. To the decline in invertebrate food, we may need to add a new twist, that of climate change, which may be decoupling birds' breeding seasons with peaks in the availability of invertebrate food.

None of these explanations, even taken together, fully account for recent declines. Two other causes have been put forward. Long-distance migrants are vulnerable to a host of pressures during migration and in their winter quarters. These could range from droughts and extreme weather conditions to persecution by hunters. Finally, nest predation may be a factor, as predators such as corvids, grey squirrels and great spotted woodpecker have increased. There may be other causes as yet unknown, and if the declines continue and do not represent a blip, we will need to redouble our efforts to find out what is going on.

Welsh woodland specialists

Here in Wales, our woodlands are home to a small group of woodland specialists which are particularly characteristic of our avian fauna; this is the realm of the wood warbler, redstart, tree pipit and pied flycatcher, their populations a litmus test to the health of woodland. These species, true denizens of Atlantic oakwoods, occupy a habitat climax which has had 5,000 years of modification by the hand of man since Neolithic times.

The wood warbler prefers woods of sessile oak, birch and mixed tree species, often inhabiting closed canopy woods with a dapauperate understorey. However, it is increasingly being recorded in parts of south Wales in conifer forests. Is this adaptation? Similar events may have occurred on the continent, where this species is regularly found in sub-alpine spruce forests.

TomCameron

Willow tit

Kirsty Ward

Willow warbler

Côr y wig - atgof yn unig?

Beth sy'n gyfrifol am y lleihad yn nifer ein hadar coedwig? Ai diflaniad prysgwydd efallai, neu ddatblygiad canopi mwy caeedig mewn coedwigoedd, wrth i reolaeth draddodiadol ddod i ben? Neu'r dirywiad yn ansawdd ymylon coedwigoedd, gan fod caeau'n cael eu rheoli'n fwy arddwys? Mae'r ffactorau hyn i gyd yn effeithio ar gyflenwad bwyd yr adar - ac mae newid hinsawdd hefyd yn chwarae rhan gan ei fod yn datgysylltu cyfnodau o gyflenwad bwyd da oddi wrth anterth y tymor magu cywion. Ond nid yw'r rhesymau hyn yn ddigon i egluro'r dirywiad diweddar. Mae pwysau ychwanegol ar yr adar wrth fudo a gallai creaduriaid ysglyfaethus fod yn broblem hefyd.

Rhaid croesawu mentrau fel prosiect Comisiwn Coedwigaeth Cymru i adfer coedwigoedd hynafol mewn planhigfeydd conwydd. Mae datblygiad rhwydweithiau coedwig, a'r cynnydd yn yr arfer o reoli coedwigoedd yn draddodiadol, hefyd yn newyddion da. Rhaid cynnal cydbwysedd gofalus rhwng annog ailddyfiant coed a chadw strwythur agored - a gwneud mwy o waith ymchwil - os am geisio sicrhau dyfodol iach i'n pedwar aderyn coedwig arbenigol, sef telor y coed, y tingoch, corhedydd y coed a'r gwybedog brith.

In the long term those specialists, especially of Atlantic oak woods, should benefit from a renaissance in the woods themselves. The Forestry Commission Wales (FCW) is tackling in earnest the restoration of ancient semi-natural woodlands (planted ancient woodlands, otherwise known as PAWS) which were formerly planted with non-native tree species. The development of woodland networks is further grounds for optimism. The revival of management should improve and vary the structure of woodlands, providing more feeding opportunities for birds which favour different zones, whether canopy or shrub, the field layer of herbaceous plants and grasses explored by the diminutive willow tit or the ground layer where the blackbird assiduously searches the leaf litter.

For two Welsh specialists, the wood warbler and pied flycatcher, there is a potential conflict between excluded grazing to maintain the herbaceous field layer and the need to encourage natural regeneration in woodland. Fine adjustment or periodic lowering of stocking levels may be needed to maintain a broadly open structure. If we are to continue to hear the melodious but hoarse song of the redstart or the sweet evocative sound of the wood warbler in a Welsh oakwood in May, we urgently need to understand why these birds are declining and what measures are required to reverse such declines.

***Patrick Lindley** is RSPB Cymru's Uplands and Species Officer.*

Steve Round

Lesser spotted woodpecker

Tristan Hatton-Ellis

The vanishing ocean traveller

The river Wye, one of Wales' most important freshwater wildlife sites.

They undertake arguably the most daunting journey in the animal kingdom, they can move from salt water to fresh and back, and they can occur in stupendous numbers: eels are important economically and ecologically. Yet numbers of this mysterious fish are falling dramatically, the elver fishery is unsustainable, and conservation measures need to be taken urgently, as ***TRISTAN HATTON-ELLIS*** *and* ***ZIGGY OTTO*** *explain.*

Eels have long been viewed with a mixture of wonder and revulsion. The very word eel conjures up visions of slimy, snake-like creatures lurking in muddy pools. In reality, eels are highly versatile fish, with a life history that is complex and even today holds mystery. Their elongated, narrow bodies enable them to live in tight spaces such as burrows, reefs and among submerged woody debris.

True eels belong to the family Anguillidae, with only a single genus, Anguilla. This includes 17 species around the world, all broadly similar in appearance. Their biology is poorly known, but most if not all are catadromous (i.e. they migrate from freshwaters to the sea to spawn). Only one species occurs in Europe, the European eel *Anguilla anguilla*. Various other fish species have evolved this body form, including the South American electric eel, and the marine conger and garden eels.

The European eel is very adaptable, occurring in most fresh water bodies from sluggish lowland rivers to high alpine lakes. Some eels do not enter fresh waters, but mature in coastal waters. Eels can travel for short distances across land, and are thereby able to colonise water bodies inaccessible to other fish. Adult eels are very tolerant of low oxygen levels, and can survive in even quite polluted waters; they are reputedly also difficult to kill. Eels are a key species in the ecology of

Miran Aprahamian

Eels in a trap

many freshwater habitats, as they are important both as predators of invertebrates and small fish, and as prey for otters and birds, especially in water bodies where few other large fish species are present. However, they are bottom-living and nocturnal, and so are rarely seen by casual observers.

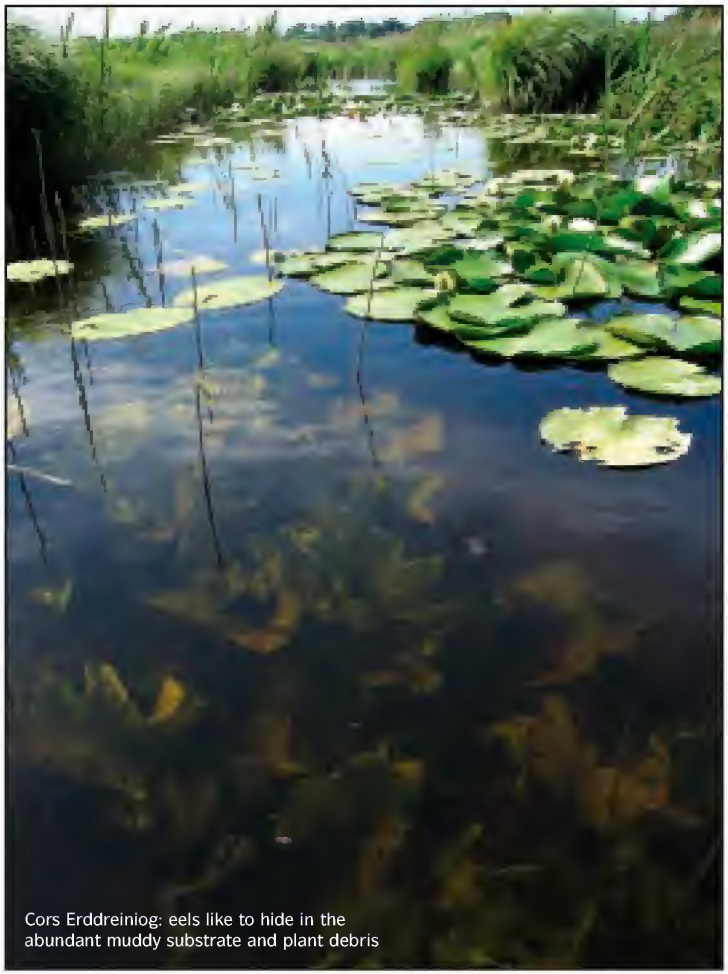
For millennia, the life cycle of the European eel was a mystery. The ancient Greeks revered the eel as the "king of fish", with Aristotle himself very partial to eel. However, Aristotle was puzzled that none of the many eels that crossed his dinner table showed signs of reproducing. He finally concluded that eels were by-products of decomposition. Others offered equally fanciful notions to explain the mystery of eel procreation. Pliny the Elder thought that eels reproduced by rubbing their bodies against rocks, whereupon bits of skin came to life. Mediaeval old wives' tales attributed the birth of eels to the gills of fishes, a small beetle, and even to horsehairs falling into the water and the dew of May mornings. Early scientists produced more plausible theories: Linneaus, the father of taxonomy, and Leeuwenhoek, the father of microbiology, mistook parasitic worms for foetal eels.

In the late 19th century the importance of the eel as a food fish grew, and European scientists became increasingly interested in studying it. In 1896, the Italian scientist Giovanni Grassi correctly deduced that *Leptocephalus brevirostris*, a translucent marine fish, was in fact a larval eel, and proved it by growing some on in an aquarium. Grassi believed that eels spawned in the Mediterranean, but since only large *leptocephalus* were found there this could not be true. In 1905 the government of Denmark assigned the oceanographer Johannes Schmidt the mammoth task of locating the eels' spawning grounds. In 1922, after eighteen years of collecting young eels in the Atlantic Ocean, Schmidt found the largest numbers of young eel larvae in the Sargasso Sea, between Bermuda and the Bahamas. Even so, there are still many unanswered questions about eel reproduction. How do adult eels find their way to the Sargasso Sea, a 5,000-mile journey? As adults have never been seen in the Sargasso Sea, where exactly do they spawn? How do European and American eels, which spawn in the same area, avoid hybridisation? The reproductive habits of the eel remain as mysterious as the fate of the aircraft and ships that have vanished in the nearby Bermuda Triangle.

Newly hatched eels, called *leptocephalus* larvae, are transparent and leaf-shaped. They drift on the Gulf Stream and other ocean currents for about 12 months, feeding on plankton en route. As they near the European coast, they metamorphose to more closely resemble adult eels. At this stage they are called 'elvers' or 'glass eels'. They migrate upstream en masse, when they are very vulnerable to predators, including man. In fresh water they disperse and colonise a range of river, lake, coastal and wetland habitats, where they settle to become 'yellow eels'. They spend most of their lives in this stage, up to 20 years in cold environments such as upland lakes. During this time they mature and, as with many fish, their sex is partly determined by their environment: most freshwater eels are female, whilst most eels from brackish and inshore waters are male. Before returning to sea to migrate back to their spawning grounds, they enter the 'silver eel' stage, turning black and silver and their eyes enlarging. Silver eels have to swim around 5,000km without feeding to reach the Sargasso Sea, a feat of endurance probably unmatched in the animal kingdom.

Ever since the work of Schmidt it was thought that eels formed a single spawning stock. However, recent genetic work by Wirth and Bernatchez shows weak but significant isolation by distance. Eels from the

Tristan Hatton-Ellis



Cors Erddreiniog: eels like to hide in the abundant muddy substrate and plant debris

Tristan Hatton-Ellis

Welsh eel, River Dee

Baltic area formed one population, those from the Mediterranean another, and those from the western Atlantic seaboard, including the Severn Estuary, were intermediate. Wirth and Bernatchez also used genetic fingerprinting to show that eels have undergone a dramatic long-term population decline, most likely in response to climate change.

Eels are a popular dish in many parts of the world, especially northern Europe and the Far East, with over 100,000 tons consumed annually in Japan alone. Both of us can confirm that smoked eel is delicious! Although adult eels are easy to keep in fish farms, nobody has yet succeeded in breeding them in captivity, and this means that the eel aquaculture industry depends on a steady supply of wild caught elvers for restocking. These are caught every year in estuaries during the upstream migration. The numbers involved are huge - for example, in 1997 France exported over 80t of elvers. Since every kilo contains 5-8,000 elvers, this equates to between 400 and 640 million elvers. In the UK, Knights (1997, in Moriarty & Dekker eds.) quoted a figure of 20-30t caught annually in the Severn Estuary rivers. More recent Environment Agency (EA) figures suggest a total annual UK catch of less than 2t, though it is not clear whether this is due to a decline or under-reporting. Most UK elvers are caught in the Severn Estuary rivers such as the Severn, Wye, Usk, Parrett and Taw.

Sadly, stocks of this once abundant aquatic species are in steep decline. By the mid-1980s there were reports of declines of up to 90% in glass eel catches in rivers across Europe. In 1998, the International Council for the Exploration of the Seas (ICES) advised the European Commission that "the European eel stock is outside safe biological limits and the current fishery is not sustainable". As well as overfishing, climate change may have reduced the numbers of larvae crossing the Atlantic. PCB and dioxin pollution, the EVEX virus and the introduced parasitic worm *Anguillicola crassus* are thought to have increased mortality of migrating silver eels.

For many years, eel fisheries in England and Wales were poorly managed. Although a licence is required to fish for eels, the legislation governing the licences does not allow the EA (the body responsible for regulating fisheries in England and Wales) to restrict either catch size or the number of licences issued. In March 2001, the EA published a National Eel Management Strategy. For the first time, this provides a clear management framework for English and Welsh eel fisheries.

Under the Strategy, existing elver fishing in Welsh estuaries will continue under licence issued by the EA, eel fishing licences have been harmonised, and collection of catch return data has been greatly improved. In Wales, byelaws have been introduced that prohibit elver fishing on estuaries between Craig y Gwbert in Ceredigion and Point of Ayr in Flintshire. Although welcome, these measures are not enough. The annual licence fee for an elver net is still less than 1/5 of the £500 a fisherman can be paid for 1kg of live elvers.

In our view, the elver fishery, which is both inadequately regulated and targets a vulnerable life history stage, is not sustainable. The UK government intends to introduce a new Fisheries Bill soon, which must grant EA the powers it needs to regulate eel fisheries sustainably. Yellow and silver eel fisheries will also need careful management in the coming years.

At the time of writing, the eel is under consideration for priority Biodiversity Action Plan (BAP) status in the UK. The eel is certainly threatened and declining internationally, and therefore meets two key criteria for becoming a BAP species. Although priority BAP designation would not itself provide the protection eels need, it would encourage local and national conservation measures. Eels are particularly appropriate for BAP status, as their life history and broad habitat requirements mean that they need protection everywhere. The recent introduction of the Water Framework Directive will also lead to improvements in water quality in many freshwater habitats. At an international level, the EC published an action plan for the management of eels in 2004. Its proposals are still under consideration.

However, there is a greater long-term threat. If climate change continues unabated, the North Atlantic Drift may weaken to such an extent that the *leptocephalus* larvae can no longer cross the Atlantic. If this happens, the once ubiquitous European eel will be unable to compete its life cycle, and extinction will follow. Ironically, this species that seems so tolerant of poor environmental conditions in freshwater may be much more sensitive at sea.

Tristan Hatton-Ellis

Llyn Coron, Anglesey: nutrient-rich lakes with well-developed marginal reedbeds make excellent eel habitat

We consider that conservation measures to protect eels need to be implemented as a matter of urgency, or we may see the demise of a fish species once so common that it was used as fertilizer. We end with a quote from Wirth and Bernatchez (2003):

The fascinating transatlantic migration and life cycle of Atlantic eels is also their Achilles heel, as [overfishing and climate change] will probably culminate in a fatal synergy if drastic conservation measures are not implemented to protect these international biological resources.

Dr Tristan Hatton-Ellis *(t.hatton-ellis@ccw.gov.uk)*
Senior Freshwater Ecologist, Marine & Freshwater Sciences Group, Countryside Council for Wales.

Dr Ziggy Otto *(z.otto@pembrokeshire.ac.uk)*
Lecturer, Coastal Zone & Marine Environment Research Unit, Pembrokeshire College University of Glamorgan.

The authors would like to thank Steve Barnard for supplying EA eel fishery statistics, and Mandy McMath for her critical comments. The views expressed in this article are those of the authors and do not necessarily reflect those of CCW.

References:

Environment Agency (2002) *National Eel Management Strategy*. Available via the internet at www.environment-agency.gov.uk

Fort, T. (2002) *The Book of Eels*. HarperCollins, London.

Moriarty, C. & Dekker, W. (eds., 1997) *Management of the European Eel*. Second Report of EC Concerted Action AIR A94-1939. Marine Institute, Dublin.

Sinha, V.R.P. & Jones, J.W. (1975) *The European Freshwater Eel*. Liverpool University Press, Liverpool.

Wirth, T. & Bernatchez, L. (2003) *Decline of North Atlantic Eels: a fatal synergy?* Proceedings of the Royal Society of London B 270: 681-688

Ger Rogan

Pigmented elver and glass eel

Pa ddyfodol i grwydryn y cefnforoedd?

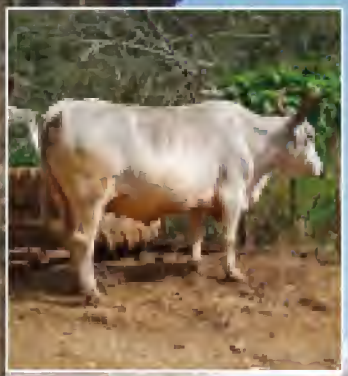
Creadur rhyfeddol a dirgel yw'r Ilysywen. Arferai rhai gredu ei bod yn atgynhyrchu o wlith boreau Mai, o flew ceffylau neu drwy rwbio'r corff yn erbyn creigiau! Dyma bysgodyn sy'n gallu byw mewn dŵr budr a theithio dros dir i gyrraedd dyfroedd newydd.

Dysgwyd, ar ddechrau'r 20fed ganrif, pa mor bwysig yw Môr y Sargasso i lyswennod ifanc. Mae'r erthygl yn disgrifio cylch bywyd y creadur, o'r cyfnod cynnar hwn ar ôl deor, pan fyddant yn teithio ar gerhyntau môr am flwyddyn, hyd at aeddfedrwydd llawn, 20 mlynedd yn ddiweddarach, a'r siwrnai 5,000 milltir nôl i foroedd pell i fwrw grawn. Gwyddwn, bellach, fod poblogaethau mewn moroedd gwahanol yn gwahaniaethu fymryn wrth ei gilydd.

Arferai Ilyswennod fod mor gyffredin fel eu bod yn cael eu defnyddio fel gwrtaith. Caiff miloedd eu dal o hyd bob blwyddyn ar gyfer y bwrdd bwyd ond mae'r niferoedd yn dirywio'n enbyd. Mae sawl ffactor yn gyfrifol am hyn, gan gynnwys newid hinsawdd, llygredd cemegol a firws llyngyr parasitig.

Ond rhaid rheoleiddio'r pysgodfeydd llyswennod yn fwy llym o lawer hefyd. A dylid rhoi blaenoriaeth i'r llysywen o dan GynIlun Gweithredu Bioamrywiaeth y DU, er mwyn annog gweithredu ar lefel leol a chenedlaethol. Rhaid gweithio'n rhyngwladol hefyd oherwydd anghenion anarferol y creadur. Ond ofer bydd pob ymdrech os bydd newid hinsawdd yn gwanhau cerhyntau môr i'r fath raddau nes gwneud hi'n amhosib i lyswennod ifanc groesi'r cefnforoedd a chwblhau eu cylch bywyd.

Topes de Collantes
Grand Park, Cuba



The flawed post-war vision of an 'efficient' farming industry, able to compete with world commodity markets, is in transition. The promotion of efficiency has proved a costly option for the taxpayer and consumer, and for the rural community and the environment. The buzzword now is 'sustainable' farming. ***JAMES ROBERTSON*** *describes his own attempts at sustainable farming, and how a Cuban adventure put this into perspective.*

'Sustainable farming'

What does it mean?

All photos: Joanna and Patrick Robertson

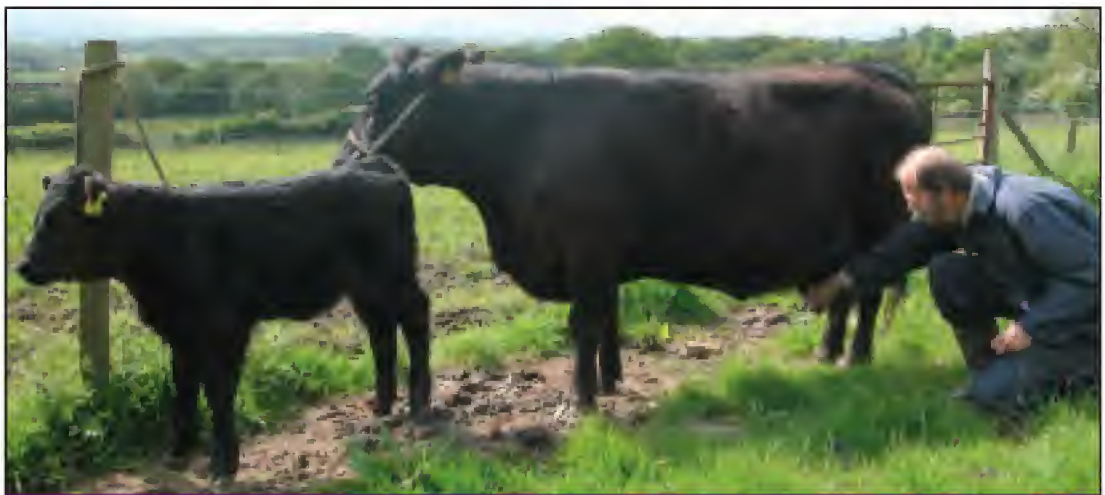
With less than a dozen Welsh Black cows and fifty sheep, I am not economically dependent on my small farm. It pays its way with a host of non-material benefits. It provides insights into farming, and contact with those who do depend financially on their farms; it gives me a chance to try out a range of environmental schemes, so I know from the grass roots how they work; and it provides daily contact with the wildlife with which I share my land. It also keeps me fit, gives me the pleasure of working with animals, and an endless supply of things to write about (while robbing me of time to do the writing!)

I will try to give an insight into a day on our small farm. The early morning job of feeding and letting out the poultry has been delegated to our youngest, Patrick. I open up the polytunnel, and have a look at the cows. All seems well. A grasshopper warbler who had been singing his heart out in a bramble patch a few weeks ago has resumed his cricket-like churring. What this says about his success at attracting a mate and breeding, I'm not sure.

The ewes, especially those with twins and triplets, were given some extra feed after lambing, and I have only to wave a yellow bucket at them and the whole flock comes running. We bring the sheep into the refurnished, gated yard. About a dozen need their feet trimming, dirty wool clipping from their back-ends (dagging), or both. Picking out those with foot problems is difficult - they exaggerate their limps in the field, but when you walk them through the yard, they pretend to be fine. At least on concrete we have more of a chance to see whether they are putting their weight evenly on all four feet, but none of those whose feet we trim is in a bad way: two have a touch of scald, a lamb has a slightly deformed foot, and the cuticle needed pairing back on several.

Now we turn our attention to Babi, who has just calved. Her udder is huge, and with mastitis a constant worry, we bring her in and I milk out one oversized back teat. Welsh Blacks are wonderfully milky and at one time were kept for milk production. She really needs a second calf. When I have tied her up and positioned myself at the rear, ready to milk, Babi performs her party trick, emptying her bowel and then her bladder.

There is pleasure and pain in looking after livestock. In turn they have a job to do, or in our case, two jobs: they need to produce first class meat (and other products) for which there is a market; and we need them to graze our meadows, some of which are unimproved and a picture at this time of year. Abundant wild flowers include marsh and spotted

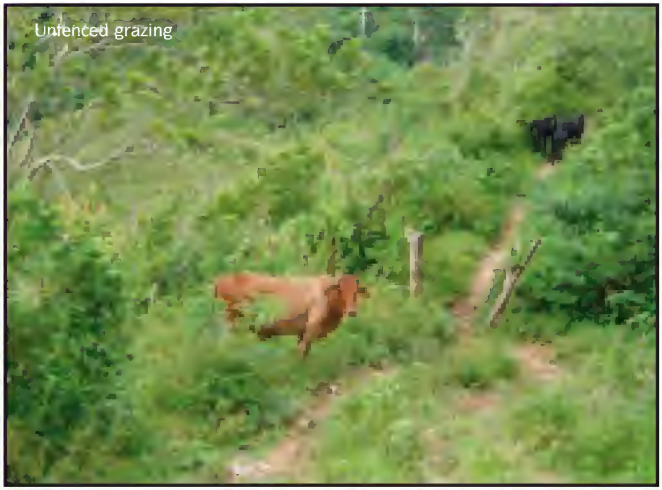


Checking Babi and calf

Farming in the forest, Escambray mountains

Organic horticulture in the forest

orchids, lousewort, yellow rattle, bird's-foot trefoil, meadow vetchling, tufted vetch, devil's-bit scabious, betony and knapweed, which attract hosts of bees, and butterflies such as ringlets, meadow and hedge browns, small skippers and common blues.



Unfenced grazing

Ours is an organic farm, and this greatly reduces inputs. I do not routinely spray, dip, inject or worm my animals, saving me the cost of preventative medicines which might be largely or completely unnecessary, but which are the standard insurance policy where large numbers of animals are kept together, and where new animals are regularly brought onto the farm. Our flock and herd are 'closed', only increasing naturally; stocking levels are modest and disease is controlled through natural immunity and keeping a close eye out for any problems. The feed I buy in is more expensive because it is organic, but organic standards encourage self-sufficiency and an energy balance - you cannot import fertility in bags, and it is not acceptable to export too much fertility either, in the form of hay sold off the farm, for example.

Is our organic farm the sort of farming operation which the Welsh Assembly Government wants to encourage? And is it truly sustainable? I would probably have answered 'yes' to the second question, at least, until last November, when I had a chance to visit a country with a genuinely sustainable agriculture born out of necessity. I went to Cuba on a trek, raising funds for the wild plant charity Plantlife. This put our claims to be sustainable into perspective.

Cuba has slowly climbed out of a major recession following the break-up of the Soviet Union and the trade links and oil which had sustained the economy. The result is the antithesis of a consumer economy - there is very little in the shops, and very limited opportunities to travel. This lack of consumption means no advertising, little noise, the few vehicles full of people (lorries are required to pick up hitch hikers, apparently), minimal greenhouse gas emissions and waste (everything gets used), and indeed a sustainable society which we found enviable

Plant raising and free-range pig rearing

in many ways.

The economic downside, in terms of real hardship, was not at all obvious. We saw evidence to support the contention that Cuba has a health and education system at least as good as the first world, and everyone has a job and gets the basics. The people we met seemed to be happy and to take enormous pleasure in each others' company. Well, with a climate like theirs...

The trek took place in south central Cuba, in the Sierra del Escambray, a belt of thickly forested mountains which stretch about 80 kilometres wide to the north of the old town of Trinidad on the Caribbean coast. We were in the Topes de Collantes Grand Park, where the wildlife was amazing. Flowers filled the forest, including the blooms of the national flower, Mariposa, a bulb related to ginger; and the spectacular birds included Cuban Emerald hummingbirds, Stripe-headed Tanagers and Cuban Trogons, Cuba's national bird.

We followed rough tracks used by local farmers, so every few kilometers the sound of barking dogs would let us know that we were approaching a hacienda. These farms within the forest were models of sustainable living. The forest economy seemed incredibly thrifty, making use of recycled or natural materials, for example using palm leaves as a roofing material. Small farms are dotted through the forest, accounting for much of the population of 5,000 people in the Grand Park. Coffee is the staple crop, grown within the forest without destroying it. Farmers are required to sell 80% of their crop to the Government. The farms we saw as we trekked had horses, the main form of transport; pairs of oxen, the main form of power; pigs, often free-ranging in the forest; sheep and goats; and dogs and assorted poultry. Life would clearly not be possible without livestock.

We visited farms and were able to contrast their farming and use of natural resources with our own situation. Cuban society is able to function on relatively tiny oil imports, although the close relationship with Venezuela has increased the flow of oil. Castro would not have chosen the sustainable economic model which Cuba has followed, and there are political costs within that society; but it is encouraging to

Oes gwir ystyr i 'ffermio cynaliadwy'?

Rhoi pwyslais ar ansawdd, ar gynaladwyedd ac ar yr amgylchedd y gwna **James Robertson** ar ei fferm yn Sir Fôn. Dyma'r union egwyddorion y mae'r Cynulliad am eu hannog wrth alw am gyfeiriad newydd i ffermio yng Nghymru dros y 15 mlynedd nesaf. I'r awdur hwn, cyfuniad o bleser a gwaith caled yw'r busnes o fagu da byw yn organaidd ar fynyryn o dir sy'n llawn bywyd gwyllt. Er ymdrechu'n daer i weithredu egwyddorion cynaladwyedd, roedd ei ymweliad diweddar â Chiwba yn agoriad llygad iddo. Dyma oedd darlun o gynildeb, ac enghraifft wych o economi wledig yn defnyddio adnoddau naturiol a rhai eildro i'r eithaf. Bu'n ysbrydoliaeth i wneud mwy adre' - ond er mor gydnaws yw ei ymdrechion ef â dyheadau honedig y llywodraeth, mae'n gresynu ei fod yn teimlo mai llwybr gwahanol iawn y mae'n troedio. Heb newidiadau mawr mewn polisi amaethyddol, go brin y bydd ei baradwys yntau yn dal i fodoli ymhen pymtheg mlynedd.

realize that a good life based on limited resources is possible. Where Cuba leads, we in Wales may, of necessity, be forced to follow at some point.

My small farm may not be as resourceful as those I saw in the forests of the Sierra Del Escambray, and I will try to do better. The wildlife at home is no less wonderful, and I hope politicians and those in positions of influence here really are committed to 'sustainable farming'. The Assembly says it wants to see a change of direction for Welsh farming, with more emphasis on quality, on sustainability and the environment. The Minister has set up a group called Farming & Environment: Action towards 2020, which will report next year. I hope this will make a difference.

My farm should be working with the grain of agricultural policy, but it does not feel like that. Recently a second local abattoir closed, adding to the already excessive ferrying of livestock around the country. I am waiting for the fine words and good intentions to percolate down to life on this small farm.

Agriculture has effected huge changes to the countryside over the last half century, at great environmental cost. Change will continue in response to economic 'drivers' (to use the current jargon), but will that change bring real benefits to the countryside, its wildlife, its managers, and the consumers and purchasers of the many services it provides? I hope I will still have my little bit of paradise in 2020, but that will depend on serious change in agricultural policy. Will today's politicians, who will be long gone by then, be able and willing to find a more sustainable path for the way we manage this beautiful country?

***James Robertson** edits Natur Cymru and farms on Anglesey.*

Hacienda Sierra del Escambray

The return of the **red squirrel**

All photos: Craig Shuttleworth

Many older people in Wales remember seeing red squirrels in their youth, in the days before greys took over the land. It is now clear that reds are unlikely to survive in the face of the grey squirrels' expansion, and action is needed if reds are to survive in Wales. CRAIG SHUTTLEWORTH reports on an encouraging fight back.

The red squirrel *Sciurus vulgaris* once graced a variety of woodland habitats across the Welsh countryside, from mixed deciduous woodland stands, to hazel coppice, hedgerows and even wooded gardens. Sadly, today its aerial acrobatics are largely confined to the gloom of a small number of extensive commercial spruce plantations where a lucky visitor may catch a fleeting glimpse of a red flash in the tree tops. Viable red squirrel populations now probably only exist in Clocaenog forest, a few forests in Mid Wales and on the island of Anglesey.

The villain of the piece is the North American grey squirrel *Sciurus carolinensis.* This introduced species not only has a competitive edge in almost all woodland habitats, but is also fundamentally involved in the spread and transmission of 'squirrel-pox' virus into red squirrel populations. This additional 'biological warfare' element has added an unpleasant twist to the plot. Where previously it was believed that intermittent grey squirrel

control might safeguard red squirrels, it is now clear that only total separation and the maintenance of completely grey-free habitats will suffice. The notion of red and grey 'coexistence', even in those coniferous habitats within which grey squirrels do not fare particularly well, is now deeply questionable. Without active intervention, the relentless decline of Welsh red squirrel populations is likely to continue. However, the success of the programme to conserve red squirrels on Anglesey has demonstrated that adopting an aggressive grey squirrel control policy can turn the tide of fortune back in favour of reds.

Island squirrels

Since January 1998 the Anglesey Red Squirrel Project has caught and killed more than 6,500 grey squirrels. As a result, the island's grey squirrel population is now extremely fragmented and has been reduced to a level where, at most, some 200 adults are present within the 720 square kilometres of countryside. The positive response of the remnant red squirrel population in Pentraeth Forest, following the removal of resident grey squirrels, was the first such recovery to be recorded in the UK, and the subsequent re-colonisation of adjacent deciduous stands still remains an unprecedented success. Nevertheless, with the exception of a handful of sightings, and the capture of two animals in Cors Erddreiniog National Nature Reserve during 2003, red squirrels have largely failed to recolonise woodlands further afield.

The underlying reason is that the geographical isolation of Pentraeth forest, and the fragmented nature of much of the island's broadleaved woodland, makes it difficult for red squirrels to spread across Anglesey. Red squirrels are much more arboreal than their grey cousins and are less inclined to cross expansive areas of open habitat. Perhaps, given years, maybe even decades, red squirrels might eventually begin to populate the available habitat unaided. However, 'perhaps' is not particularly useful currency when trying to secure future project funding, or when trying to galvanise local support for continued grey squirrel removal. It would be far better to make geographical red squirrel expansion a much more definite prospect, and one attractive option is to reintroduce red squirrels back into their former range - in effect, to lend them a helping hand in leap-frogging habitat gaps.

Unfortunately there is a fairly compelling drawback. A review of recent red squirrel reintroductions makes very sober reading indeed, as there has yet to be a successful UK release.

Reintroduction and release

One of the earlier reintroductions was an experimental attempt in the late 1980s to restore red squirrels to Regent's Park by releasing captive animals from London Zoo. It may be unsurprising to learn that the project ended in a spate of road traffic deaths and losses due to predation by domestic cats. Then, in the early 1990s, English Nature championed the Red Squirrel Species Recovery Programme in East Anglia, selecting Thetford Forest as a potential national refuge. A phased release of translocated and captive-bred animals was intended to bolster the tiny, existing, wild red squirrel population. However, intensive control measures could not prevent continued reinvasion by grey squirrels, and the project was eventually abandoned following repeated squirrel-pox disease outbreaks. Red squirrel releases in Dorset and at the Welsh Mountain Zoo in Colwyn Bay were similarly unsuccessful, with the continued presence of grey squirrels at both study sites being a common contributing factor. However, although none of these

projects were able to create a self sustaining red squirrel population, they did provide an invaluable wealth of information when a reintroduction was considered on Anglesey. The most obvious lesson was to ensure that grey squirrels were completely removed from any red squirrel release site.

One site on Anglesey immediately stood out above any other as a suitable release site: Newborough Forest. This coastal pine plantation was once home to a thriving red squirrel population but, following the arrival of the grey squirrel, the species became extinct there during the mid 1990s. The forest is around 750 hectares in area, and so is of a sufficient size to support a viable red squirrel population providing the woodland is managed sympathetically.

Naturally the first task to be tackled was the removal of the resident grey squirrel population. Nearly 500 grey squirrels were trapped in 2002, and numbers quickly dropped in the following years until 2005, when only five adults and five juveniles were caught. With grey squirrels on the back foot, the plans for releasing red squirrels could be finalised. A partnership group consisting of Forestry Commission Wales, Menter Môn, and the Welsh Mountain Zoo set about this task, and during the late winter of 2003 five large enclosures were constructed within the forest. Unlike most previous red squirrel reintroductions, at Newborough the strategy was not simply to house and release adult animals but to maintain mixed-sex pairs of red squirrels and to release any offspring which they produced into the surrounding forest.

The breeding stock was sourced through the Welsh Mountain Zoo and came from captive collections that form the UK breeding programme. In the spring of 2004 the forest enclosures housed four pairs and an adult trio consisting of two males and a female. The trio were fitted with radio-tags and were released in May so that data on ranging behaviour could be gathered. The animals very quickly

established ranges in the forest, and the female reared two litters consisting of three and four young respectively. Three of the four remaining captive pairs bred successfully and a total of five litters were produced. A significant number of these young were then released in the autumn, and it was hoped that these would form the core of an established wild population.

The spring of 2005 appeared to be proceeding as successfully as the previous year, with wild-born litters being discovered in nest boxes close to the release site. Then tragedy struck. There was a sudden disease outbreak within several of the enclosures. Although detailed post mortem examinations could not provide us with a definitive cause, it was at least clear that we were not dealing with the squirrel pox virus. Nevertheless, the disease eventually led to the loss of three breeding pairs and a number of weaned young. Following the death of one particular female, the project was faced with a litter of orphaned and hungry baby squirrels: three out of four were successfully hand-reared.

During September 2005 we were only able to release three young animals. Disease problems experienced elsewhere in captive breeding collections meant that we were also unable to restock the enclosures, so it is unlikely that any further young animals will be released during 2006. However, on a more positive note, in six days of trapping this spring a total of 14 wild, adult red squirrels were caught, with five out of the six females found to be breeding. The total number of animals now resident within Newborough still remains unclear, but even if the modest number trapped to date accounted for everything that was currently present, this would still mark out the Newborough reintroduction as a relative success.

Days to come

So what does the future hold for the red squirrel on Anglesey? Well, it is anticipated that grey squirrel numbers will continue to decline across the island, and complete eradication is rapidly becoming a more realistic and tangible prospect. The long term aim

Breeding cages for the red squirrels

remains to facilitate the return of the red squirrel to all of its former range on Anglesey and to offer a blueprint that may prove useful to those striving to conserve red squirrels elsewhere in the UK. To that end, Menter Môn have, in partnership with Anglesey Aluminium, CCW and the Environment Agency, begun to examine the feasibility of building on the Newborough forest reintroduction project by introducing red squirrels into the Penrhos Nature Reserve on Holy Island. This is a woodland site that is outside the natural geographical range of the red squirrel and consequently any release there would set an interesting benchmark in the national strategy to conserve the species.

There are obvious challenges ahead for red squirrel conservation on the island; the task is a certainly a daunting one. But with active local support and resolve we have every chance of success.

***Dr Craig Shuttleworth** is the woodland ecologist at Menter Môn and is a member of the Advisory Council of the European Squirrel Initiative.*

Reporting red and grey squirrels
Menter Môn welcomes any reports of red and grey squirrels from Wales. We are particularly keen to hear about sightings from Anglesey and about any preserved red squirrel specimens of known Welsh origin which people may possess. Please contact us at: Menter Môn, Llys Goferydd, Stâd Ddiwydiannol Bryn Cefni, Llangefni, LL77 7XA; tel (01248) 725700; email mail@redsquirrels.info.

Further information
Information on Welsh red squirrels can be found at www.redsquirrels.info

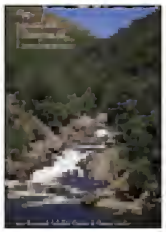
Hynt a helynt gwiwerod coch môn

Heb ragor o ymyrraeth gan ddyn, dal i dioddef y bydd y wiwer goch ym Mhrydain. Er i'w niferoedd gynyddu yng nghoedwig Pentraeth, ar ôl ymdrech i ddifa gwiwerod llwyd ar Ynys Môn, nid yw wedi llwyddo i ledaenu ymhellach gan fod cynefinoedd addas mor wasgaredig ar yr Ynys.

Aflwyddiannus su'r ymdrechion i ailgyflwyno gwiwerod cochion ym Mhrydain yn y gorffennol. Ond tybiwyd fod coedwig Niwbwrch, lle bu gwiwerod cochion yn byw tan ganol y 1990au, yn addas ar gyfer menter o'r fath. Wedi difa mwyafrif y gwiwerod llwyd, gollyngwyd rhai coch yno yn 2003. Cymysg yw eu hanes. Lladdwyd nifer gan haint yn 2005 ond gwyddom fod rhai yn magu yno eleni, er nad ydym yn sicr ynglŷn â maint y boblogaeth erbyn hyn.

Gyda chyn lleied â 200 o wiwerod llwyd ar ôl ar Ynys Môn, mae cyfle go iawn nawr i gael gwared â nhw yn llwyr. Gobeithir defnyddio'r Ynys fel enghraifft lwyddiannus o brosiect i ailgyflwyno gwiwerod cochion, fel y gall eraill ddysgu o'r profiad. Mae gwaith yn digwydd hefyd i weld a oes modd ailgyflwyno gwiwerod cochion i Warchodfa Natur Penrhos, ar Ynys Lawd - arbrawf sydd o ddiddordeb arbennig gan fod y safle y tu hwnt i ardal ddosbarthiad naturiol y wiwer goch.

Silff Lyfrau Amgylcheddol



THE MOSSES AND LIVERWORTS OF CARMARTHENSHIRE

Sam Bosanquet, Jonathan Graham & Graham Motley

Published with the support of CCW & WAG, © the authors 2005, Softback £20.00

ISBN 0-9552022-0-5 / 978-0-9552922-0-9

The study of mosses and liverworts (collectively 'bryophytes') is often regarded as one of the more specialised and esoteric branches of botany. This is perhaps why our understanding of the distribution and ecology of bryophytes has been relatively slow to develop in comparison with the flowering plants. It has relied over the years on no more than a handful of dedicated specialists at any one time, the majority of whom have been 'amateurs' in the sense that their primary employment is not as bryologists.

The authors of *The Mosses and Liverworts of Carmarthenshire* are amongst the current generation of such specialists. They all work, or have worked, for the Countryside Council for Wales but have undertaken this project in their own time, in evenings, at weekends and during holidays. The high quality of this resulting publication is all the more remarkable for that.

The heart of the book is an atlas of 'dot maps' showing the distribution of individual species and sub-species in Carmarthenshire. It is the fruit of a mapping project begun back in 1992 by one of the authors, Jonathan Graham. He was shortly joined in his efforts by Graham Motley and later, in early 2000, by Sam Bosanquet. The distribution maps are based on the tetrad (2 x 2 km square) of which 678 occur in Carmarthenshire. Mapping a county at this scale is an ambitious undertaking, but the synergistic combination of these three young bryologists has proved more than equal to the task. Bryophyte records have been comprehensively collected and collated for 95% of these tetrads. This has been achieved by dedicated fieldwork supplemented by visits to herbaria, trawls of published and unpublished sources and by careful data management.

In addition to the distribution maps, each species or sub-species listed has an accompanying description which includes valuable information on habitats, substrates, associated species etc. There are also thorough introductory sections covering topography, geology, soils, climate, habitats, and identifying the most significant bryophyte sites in Carmarthenshire. Other more analytical sections consider historical changes in the bryophyte flora and the 'biogeography' of the flora, and make comparisons with neighbouring vice-counties. The history of bryophyte recording is also covered in a highly readable way.

Wales as a whole is one of the richest bryological areas of Britain, but the parts that may first come to mind are the rich Atlantic oakwoods of Meirionydd, or the arctic-alpine habitats of Snowdonia. This excellent new work puts Carmarthenshire firmly on the bryological map. Since over 50 % of British mosses and liverworts are included, its usefulness extends beyond its geographical area. It is highly recommended.

Alan Hale

RUNNING FOR THE HILLS: A MEMOIR

Horatio Clare

John Murray
2006
Hardback
278 pp
£14.99

ISBN 0719565383

A young couple from London with little money buy a working upland farm in the Brecon Beacons. Here their children are born and raised. Horatio, the elder of two boys, remembers the horrors and wonders of his childhood, and pieces together the fragmenting relationship of his parents.

Mother Jenny falls in love with the land and her sheep, and braves real hardships to stay there. Robert feels excluded, and is not prepared to lose his journalistic ambitions on a piece of cold mountain, and retreats to London.

The bare bones sound unpromising. Yet this is one of the most compelling books I have ever read. The farming year starts with a painfully accurate description of the first lambing season. I had just been through the mill when I read Clare's account of a crow attack on a newborn lamb. I had spent two

days trying to save a lamb which had been pecked at either end by a crow, leaving two red holes through its skull.

The account of hardship, long, cold winters, and joyous summers, of farming neighbours and visitors, of nerve-wracking incidents and significant events, is beautifully told. Perhaps Clare's career in BBC Radio's arts department has had something to do with the exceptional quality of the writing.

At the centre of this memoir are two very different parents, one living her dream and bringing up her children largely single-handed, the other absent most of the time but a presence throughout the book. You become engrossed in their lives, to which nature, landscape and farming are the backdrop.

The author's portrayal of his parents is sensitive and unpartisan, which cannot have been easy. There is a hint of selfishness about the way that Jenny bravely pursues her dream, and of hopelessness about how Robert loses his wife and children to the mountain.

The Farm, Richard Benson's story of the decline and sale of his parents' farm in Yorkshire, was short-listed for a prize when it came out last year, and has gone on to be a best seller. It is a delightful book, but *Running for the Hills* would be my nomination for a book award. It has the added appeal that it is set in the breathtakingly beautiful if sometimes harsh Welsh uplands.

James Robertson

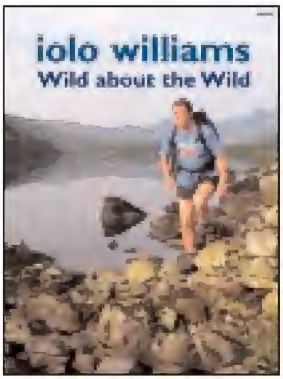
WILD ABOUT THE WILD

Iolo Williams
Gomer Press 2005 £14.99
Hardback
ISBN 1 84323 458 0

Wild about the Wild is 'a year in the life of Iolo Williams' from September 2004 to August 2005. The tone is set by the cover, with the subject - Iolo, not wildlife - running along a lakeside, quads bulging, eyes firmly set on the horizon. The picture is obviously posed; no birder goes out without his binoculars, and no serious runner trains in walking boots!

Although he has tales of far off places, he is at his best on home turf. There are acute observations on every page. The rare stuff, such as kites, hen harriers and ospreys, is there to be sure, but Iolo is at his most engaging describing the ordinary. I particularly enjoyed the description of house sparrows in central Cardiff. The foreign accounts are well written; it's just been done before. But Iolo still manages to make his mark, describing the extraordinary ability of gorillas to break wind. Somehow, Attenborough failed to mention that.

Much is made in the book's blurb about it being an 'honest diary'. But in this respect it is strangely disappointing, with Iolo trying to make serious comment, but never quite achieving it. Pheasant shooting creates habitat, but the people who do it are pretty sad. We can all agree with that. Fox hunting is a 'complex issue'. You think? There is a curiously opaque reference to conservation group rivalry over the breeding ospreys at Porthmadog, which is never



resolved. Come on Iolo, don't be shy. Dish the dirt.

He also has plenty to say about his erstwhile colleagues. Conservation organisations are beset with petty jealousies, obsessed with personal gain and increasingly staffed by 'pen-pushers'. It doesn't stop there. All politicians are untrustworthy liars. Local politicians rank below slime moulds. But since there is no analysis of any substance, this just comes off as name-calling. Occasionally, he leaves you scratching your head in disbelief. The year was 'tragic', because thousands died in the Asian tsunami, but it was also 'joyous', because Wales 'won a memorable grand slam'. So, every cloud has a silver lining then?

Quite who the book is aimed at is hard to say. Whilst it will delight armchair naturalists, I doubt there is much here for most *Natur Cymru* readers, apart from confirmed Iolo fans. Reading it is like looking at your mate's holiday snaps. It's fun, but after half an hour you find yourself surreptitiously looking at your watch.

Andrew Lucas

Cymru a'r byd

"Mae'r oen yn gallu dysgu'r ddafad sut i frefu." Dyma'r mantra a gaiff ei ddefnyddio'n aml mewn dadleuon gwleidyddol y dyddiau yma, yn enwedig wrth drafod yr amgylchedd. Yn yr ysbryd yma y cafodd y Strategaeth Amgylcheddol ei lansio'n ddiweddar yn Ysgol Gyfun Bryncelynnog, Rhondda Cynon Taf, gan Carwyn Jones AC, y Gweinidog dros yr Amgylchedd.

Os yw ysgolion fel Bryncelynnog yn arwydd o'r hyn sydd i ddod, yna mae Cymru yn meithrin digonedd o bobl ifanc sy'n pryderu llawer am y byd o'u hamgylch. Ond, fel mwyafrif oedolion y wlad, efallai fod llawer o'r plant a gyflwynodd eu prosiectau 'gwyrdd' lleol yn llawn brwdfrydedd a balchder wedi methu â dirnad arwyddocâd gwleidyddol enfawr y Strategaeth Amgylcheddol a'i gweledigaeth ar gyfer y chwarter canrif nesaf o ran gwella amgylchedd Cymru. Yn wir, ymddengys mai'r hyn a oedd yn mynd â bryd y Western Mail oedd y ddadl ynghylch y taliadau a fydd yn cael eu codi am gasglu bagiau bin - ni soniwyd o gwbl am y darlun cyflawn y mae'r Strategaeth yn ei gyflwyno.

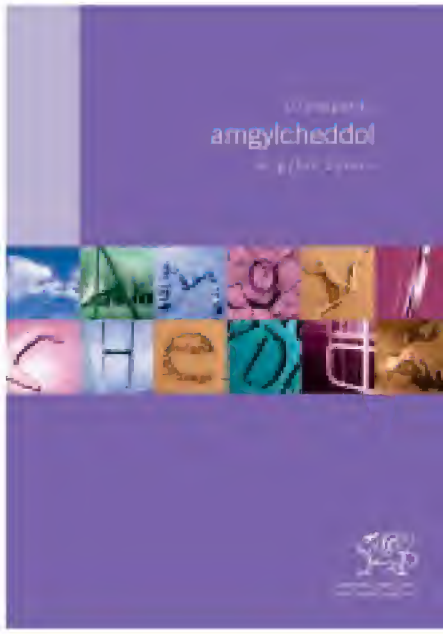
Am y tro cyntaf yn ein hanes, mae Cymru wedi pennu gweledigaeth genedlaethol ar gyfer yr amgylchedd: datganiad yn sôn am yr hyn y mae Llywodraeth Cynulliad Cymru yn bwriadu ei wneud, sef rhywbeth a fydd, gobeithio, yn dod â buddion gwirioneddol i ansawdd bywyd trwy gael amgylchedd gwell. Y ddogfen hon gan Carwyn Jones yw'r cam mwyaf sydd wedi ei wneud hyd yn hyn yn y wlad hon tuag at gyflawni'r dyheadau y mae llawer o gyrff statudol ac anstatudol yn sector amgylcheddol Cymru wedi bod yn eu coleddu ers tro byd.

Yn ôl yn 1999, pan gafodd y Cynulliad ei greu, fe ofynnodd y sector gwirfoddol - trwy gyfrwng ei gorff mantell, Cyswllt Amgylchedd Cymru - i bob plaid wleidyddol gefnogi'r achos dros gael fframwaith strategol ar gyfer cael amgylchedd yng Nghymru a gâi ei ddiogelu'n well, ei hyrwyddo'n well a'i ddefnyddio'n fwy priodol - gyda datblygu cynaliadwy, wrth gwrs, yn sail i hyn oll. Mae'r weledigaeth honno wedi esgor ar y Strategaeth, a rhaid i ni gydnabod yr holl waith caled sydd wedi arwain at hyn.

Eto mae gan nifer o'r cyrff sy'n perthyn i'r sector amgylcheddol yng Nghymru bryderon gwirioneddol ynghylch uchelgais a chwmpas y Strategaeth. Mae sawl un wedi dadlau - ac, mae'n siwr, yn mynd i ddadlau eto yn y dyfodol - y gallai Llywodraeth y Cynulliad fod wedi bod yn fwy beiddgar, gan bennu targedau pellgyrhaeddol a phendant o ran gwella amgylchedd y wlad ar gyfer cenedlaethau'r dyfodol. Fe fydd sawl un yn sylwi mai gwaith ar y gweill yw'r Cynllun Gweithredu o hyd, ac fe fydd angen ei ddiweddaru'n rheolaidd er mwyn gofyn i'r llywodraeth wneud mwy. Ar hyn o bryd, mae'r pryder na fydd yna ddigon o adnoddau ar gael efallai i gyflawni'r targedau hyn yn her sylweddol, ac fe fydd angen cydweithredu er mwyn sicrhau y bydd yr amgylchedd yn cael mwy o sylw ar yr agenda wleidyddol.

Er gwaethaf y pryderon hyn, mae'r Strategaeth Amgylcheddol a'r Cynllun Gweithredu yn ddogfennau y dylid ymfalchïo ynddynt. Dyma'r patrwm y mae'n rhaid i ni weithredu arno bellach er mwyn achub trysorau naturiol ein gwlad. Os yw Cymru am sicrhau ansawdd bywyd gwell i'w thrigolion, yna mae'n rhaid i ni sylweddoli bod ffyniant economaidd, iechyd a chyfleoedd - yn wir, pob elfen a all arwain at lwyddiant - yn dibynnu ar amgylchedd o'r radd flaenaf. Yn y pen draw, does gan ddisgyblion Bryncelynnog ddim dewis arall. Dyma her y mae'n rhaid i ni ei hwynebu yn llawn gobaith.

***Geraint Hopkins** yw Cadeirydd Cyswllt Amgylchedd Cymru a Chydlynydd Compact Amgylcheddol Cymru.*



Wales and the world

Geraint Hopkins

"Children often have more to teach us than we them." This mantra is often used in popular political debate, especially when discussing the environment. It was in this spirit that the Environment Strategy was recently launched at Bryncelynnog Comprehensive School, Rhondda Cynon Taff, by Environment Minister Carwyn Jones AM.

If schools like Bryncelynnog are anything to go by, Wales has in its bosom plenty of young people who care deeply about the world around them. But like most of the adult population, many of the children who presented, with great enthusiasm and pride, their local green projects may have missed the immense political significance of the Environment Strategy and its 25-year vision for improving the environment of Wales. Indeed, even the Western Mail seemed interested only in the row over bin bag collection charges, sadly missing the bigger picture which the Strategy presents.

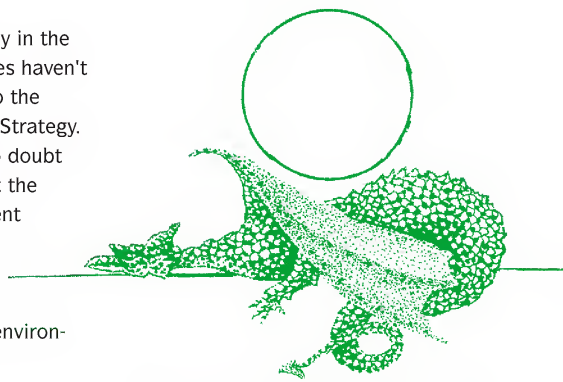
For the first time in our history, Wales has set out a national vision for our environment: a statement of intent which the Welsh Assembly Government hopes will deliver real benefits for the quality of life through a better quality environment. Carwyn Jones' document represents the biggest step so far taken in our country towards achieving the long-held ambitions of the many statutory and non-statutory bodies in the Welsh environment sector.

Back in 1999 when the Assembly was first created, the voluntary sector, through its umbrella body, Wales Environment Link, called upon all political parties to support the case for a strategic framework for delivering a better protected, promoted and utilised environment in Wales, firmly grounded in the principles of sustainable development. That vision has resulted in the Strategy and we must recognise the huge effort that has brought us to this point.

This is not to say that many in the environment sector in Wales haven't very serious concerns as to the ambition and reach of the Strategy. Many have argued, and no doubt will continue to argue, that the Welsh Assembly Government could have been bolder, setting more far-reaching and measurable targets for improving our environment for future generations. The Action Plan, most commentators will fairly observe, is still work-in-progress and will need to be updated regularly to ask government to do more. Importantly, the question of whether adequate resources are available to achieve these targets remains a present and significant challenge. It will take a concerted effort to ensure that the environment becomes a higher priority on the political agenda.

Despite the serious concerns, the Environment Strategy and Action Plan is a great achievement. It is the blueprint by which we are now bound to act to save our natural assets. If Wales is to achieve for its people a better quality of life, then we must be clear that economic prosperity, health and opportunity - indeed all the ingredients for success - depend on a good quality environment. There is truly no other option for the pupils of Bryncelynnog. It is a challenge we must face with optimism.

***Geraint Hopkins** is Chairman of Wales Environment Link and Wales Environment Compact Co-ordinator.*



Islands round-up

Geoff Gibbs

There is lots of exciting news from the Pembrokeshire islands, regarding wildlife and other matters.

Juan Brown

Demolition of the warden's house on Skomer

Skokholm purchase completed

The Welsh Wildlife Trusts became the owners in April. By then, £650,000 had been raised and the appeal remains open for funding future management needs. Contributions can be sent to the **Skokholm Appeal, WTSWW, The Nature Centre, Fountain Road, Tondu, Bridgend CF32 0EH**.

Skomer make-over progressing

The major building project to provide new accommodation for staff and visitors finally got underway, with funding from HLF, CCW and the Tubney Charitable Trust. Stringent precautions were taken to ensure no rats or other unwanted mammals got a lift over; even the arrival of mainland bank voles could have serious implications for the genetic integrity of the Skomer vole. A flat-bottomed open barge was used, with no voids or sections which could conceal stowaways. Six bargeloads were landed during the season; each load took three days to transport up the island.

Marine life

As always for vigilant island naturalists resident for most of the year, the sea produces some surprises.

- Skokholm reported good numbers of common dolphins in June, July and August, two June sightings of pilot whale, a mako shark in July and four species of jellyfish on 12th July: common, compass, *Cyanea lamarkii*, and lots of comb jellies.
- Skomer recorded a common seal (rare on Welsh islands) with the greys in North Haven Beach in April, and also the spring birth of a grey seal pup; the normal pupping season here is September onwards.
- The Edward Grey Institute (Oxford) have carried out seabird research on Skomer for many years. A new technique has involved fitting data-loggers to breeding Manx shearwaters. Preliminary results have revealed foraging trips to the north (as far as the Mull of Galloway), and to the south and west.

Spring migrants on Skomer

The star bird of April was a hoopoe, found by volunteer Berry Mulligan. This was a remarkable coincidence, as it was he who found the last hoopoe here, on his previous visit in 2003. May highlights included a red-backed shrike, two quails, a male Montagu's harrier, nightjar, and another hoopoe.

Shooting auks on Skomer

Artists Dave Cowdry and Dave Miller managed to get some excellent underwater shots of puffins and the odd razorbill last year, by snorkelling with digital cameras in waterproof housings. A decoy attached by a piece of string to their masks (originally a teal, expertly converted to puffin and razorbill respectively) soon had a raft of nosey auks surrounding them.

Unusual birds on Skokholm

- A pair of reed buntings were present in the breeding season, and breeding was suspected.
- A kingfisher paid an evening visit in August, diving for fish in South Haven. It had great difficulty finding somewhere to perch on the vertical cliffs!
- Autumn visitors included icterine and yellow-browed warblers.

Visiting Skomer and Skokholm

To obtain details of day trips or volunteering on Skomer, and week-long stays (also occasional day trips) on Skokholm, email **islands@welshwildlife.org** or phone **01239 621600/621212**.

*Thanks to **Juan Brown** (Skomer) and **Jo Havard** (Skokholm) for providing material.*

Mammal news

Frances Cattanach

Brown hares

Thanks to the public response to the North Wales Wildlife Trust's request for brown hare records last year, the Trust is now taking the study forwards by further investigating areas of frequent sightings and those of low/no sightings, in Conwy and Gwynedd.

Dawn and dusk are the best times to spot hares, as during the day they are often laying low in their forms trying to avoid predators. Vicky Swann has been venturing out at dusk, either on foot or in a vehicle, to look for the brown hare. The Trust will use this information to estimate population densities and to examine their relationship with habitat mosaics.

At the same time, the Wildlife Trusts in Pembrokeshire, Montgomeryshire, Ceredigion and North Wales are collecting any hare records, so if you spot a hare whilst out and about, please request a survey postcard from the Wildlife Trusts in Bangor (**01248 351541**, **ChrisWynne@wildlifetrustswales.org**) or **Cilgerran** (**01239 621212**, **l.wilberforce@welshwildlife.org**). If you are a landowner keen to manage your land with the needs of the brown hare in mind, contact the Bangor office for a leaflet.

Badgers

At a time when the English badger is under serious threat of culling in an attempt to halt the spread of bovine tuberculosis (bTB) in cattle, the situation in Wales is looking more positive. The Wales Assembly Government is taking a more rational, evidence-based view, and has acknowledged that much more research needs to be done before culling is considered. One of their measures is the 'Badger Found Dead Survey', which will help identify carcasses infected with bTB. The public are asked to report any dead badgers as soon as they are found. If the animal is found on a public highway contact your Local Authority, who will arrange collection. On private property, collection should be arranged through your local Animal Health Divisional Office. Please note that you should not interfere with or move the carcass yourself. The collection agencies are fully trained to do this work and will not accept liability for any damage that you may cause.

It cannot be denied that bTB is a major problem, but scientific evidence suggests that badger culling does not necessarily reduce disease incidence in cattle and can, in fact, lead to an overall increase. All the evidence points to cattle-to-cattle transmission as being by far the most important factor in the spread of bTB. The major issue is making sure cattle are tested before or after they are moved, so that infected cattle are not introduced into bTB-free areas.

Some recent research shows that cattle herds on farms with hedges and ungrazed land are less likely to become infected. The researchers, from the Wildlife Conservation Research Unit at Oxford University, suspect hedges keep badgers and cattle apart, preventing transmission of bacteria. Alternatively, it could be that badgers or cattle living on ecologically managed farms are healthier, raising their immunity.

These facts do demonstrate that there are relationships between farming practice and bTB rates, and these are surely worthy of further investigation.

Winter records

Kate and Geoff Gibbs had excellent views of a stoat in complete ermine in January in the hills above Llanfairfechan. It was hunting in an area of short turf and rounded gorse bushes, spending much time inside the gorse. Whenever it came out in the open it was extremely conspicuous. It was not far from where Geoff saw one pursuing a hare last year.

In November, Linda Jones was birdwatching from the prom at Llanfairfechan when she had a lucky sighting of at least 10 bottlenose dolphins leaping out of the water near to Puffin Island. There was one large dolphin, presumably male, and a number of middle sized and smaller ones. They swam from east to west, then turned around and swam the other way, leaping out of the water, and continued in this manner for ten minutes or more. She said it was a spectacular sight.

Mammal Conference

Finally, I hope you've all got your bookings in for the Wales mammal event of the year, the Wales Mammal Conference to be held 7th and 8th July in Aberystwyth. There's a varied programme from cetaceans to beavers and invasives to re-introductions - everything a keen mammalogist could wish for!

Frances Cattanach
Director, North Wales Wildlife Trust
fcattanach@wildlifetrustswales.org

Hysbysfwrdd / Noticeboard

If you would like your wildlife event to feature on this page please contact Mandy Marsh on 01248 385574 or email m.marsh@ccw.gov.uk

Butterfly Conservation

GET MOTHING!

Numerous EVENTS and COURSES are running throughout the year. For full details of what's happening near you contact **0870 7706153** or **info.bcw@btconnect.com** , or see **www.northwalesbutterflies.org.uk** or **www.butterflyconservation.org/southwales**

22-30 Jul *Save Our Butterflies Week*

23 Sept *National Moth Night* - an annual celebration of moths and moth recording

Moth-trapping at Eyarth Rocks BC Reserve, Ruthin

For dates and meeting times contact David Hinde **0151 648 3887**or **member@dhinde.freeserve.co.uk**

Moth-trapping in North-east Wales

Details from Jan Miller **01352 711198** or **079 7960 3846** **info@northwalesbutterflies.org.uk**

Moth-er's Union Meetings

First Monday in each month, 8.00pm. Pensychnant Nature Conservation Centre, near Conwy. All welcome. Contact Julian Thompson **01492 592595** or **secretary@northwalesbutterflies.org.uk**

Treborth Monthly Moth Meetings

Third Monday of each month, 7.30 onwards. Treborth Botanical Gardens, Bangor. Contact Doug Murray **01248 750089**.

Centre for Alternative Technology

CAT is three miles north of Machynlleth on the A487. Travel information: **0870 608 2 608** (local buses) & **08457 484950** (rail). Tel **0845 330 8355**, email **info@cat.org.uk**, or visit **www.cat.org.uk**

22 Jul-1 Sept; 22-28 Oct. *Children's theatre activities*

Varied programme of holiday activities where kids can learn how to reduce their impact on the earth. 11-4pm

12 & 13 Aug *Organic gardening tours*

Tours of our inspirational organic gardens: Gardeners' Question Time 2pm daily.

29 Sept - 1 Oct *Sustainability and spirituality conference*

Snowdonia Society

MOUNTAIN WALKS TO CAPTIVATING TALKS

For full details contact Tŷ Hyll/The Ugly House, Capel Curig, Conwy LL24 0DS. Tel **01690 720287**, email **info@snowdonia-society.org.uk**, **www.snowdonia-society.org.uk**

8 Jul *Dry Stone Walling Competition*

Open to all wallers. Spectators welcome. Nant Ffrancon.

12 Jul *An Evening Underground*

Snowdonia from a different angle! Explore Bwlch yr Plwm mine, Penrhyndeudraeth. Limited spaces, please book early.

5 Aug *Mountain Geology*

Make sense of the story in the rocks and scenery: Cwm Croesor, Rhosydd quarries. Please book early.

15 Aug 2pm *Farm Walk*

Fferm Merthyr, above Harlech. Discover how the farm is managed and discuss the future of farming in the National Park.

5 Sept 10.30am *Walking tour of the Egryn estate.*

Join John Latham (National Trust Archaeologist) on a walk (approx. 4 hours) of this fascinating estate.

PRACTICAL CONSERVATION WORKDAYS

Help make a difference with positive practical action!

8 Aug, 4 Sept *Clear up workdays*

From fly tipping to tidal debris, these clear ups are carried out as required.

15 Jul, 28 Sept *Footpath restoration*

Improve access to the hills and mountains whilst protecting the landscape from erosion.

25 Jul, 19 Aug, 18 Sept *Conservation workdays*

Work takes place wherever required and can last anything from 2 hours to a full day or more!

Most Mondays from 10am *Wildlife gardening and woodland conservation* at the Ugly House. Please contact the Society about this exciting and sociable work.

Shared Earth Trust

COURSES

Denmark Farm Conservation Centre, Betws Bledrws, Lampeter, Ceredigion, SA48 8PB

Tel: **01570 493358**, **www.shared-earth-trust.org.uk**

10 Aug *Involving Communities in Environmental Projects* £75/50

26 Sept *Supporting Schools to deliver Education for Sustainable Development* £75/50

6 Jul *Pond Creation and Management* £100/50

28-31 Jul *Higher Plant Identification - an introduction* £50

16 Oct *Mosses, Liverworts and Lichens - an introduction to lower plant identification* £50

Bespoke courses

We also offer bespoke courses. Please call for full details.

North Wales Wildlife Trust

LACEY LECTURE

17 Nov *The Ones That Work*

Illustrated talk by Michael Leach, author and photographer. Full details and tickets available later in the year. 7.30 at Ysgol Glan Clwyd, St Asaph. NWWT **01248 351541**.

Fenn's, Whixall & Bettisfield Mosses

30 Jul, 1-4 pm *Dragonflies on Whixall Moss* - An afternoon walk to see the wealth of dragonflies on the Mosses

9 Aug 9.30-4.00 *Bog Creatures Biodiversity Workshop for children*. All bugs and creepy crawlies welcome!

20 Aug 11-3.30 *Woodcarving on the* Mosses, including a walk to fetch pre-historic bog pine www.bwa-woodcarving.fsnet.co.uk

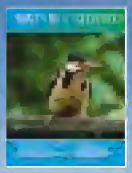
24 Sept 2pm *Fungal Foray* www.britmycolsoc.org.uk/

All events MUST be booked IN ADVANCE by contacting Jackie Giles on weekdays on 01743 282000, or Joan Daniels on 07974 784799 at weekends and are free unless stated (e-mail jackie.giles@english-nature.org.uk, or visit www.english-nature.org.uk)

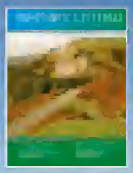
Diolch am y lluniau i / For illustrations, thanks to:
English Nature, Mandy Marsh, Alastair Robertson

Back issues of *Natur Cymru* (Nos 2 - 18) are available priced £2.50

Number Rhif 11

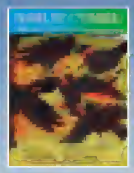


Number Rhif 12

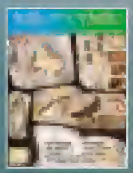


Number Rhif 13

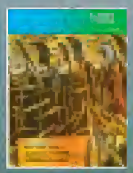
Number Rhif 14



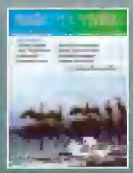
Number Rhif 15



Number Rhif 16



Number Rhif 17



Number Rhif 18

Michael Hammett

NATUR CYMRU SUMMER/HAF 2006

www.naturcymru.org.uk

£3.50